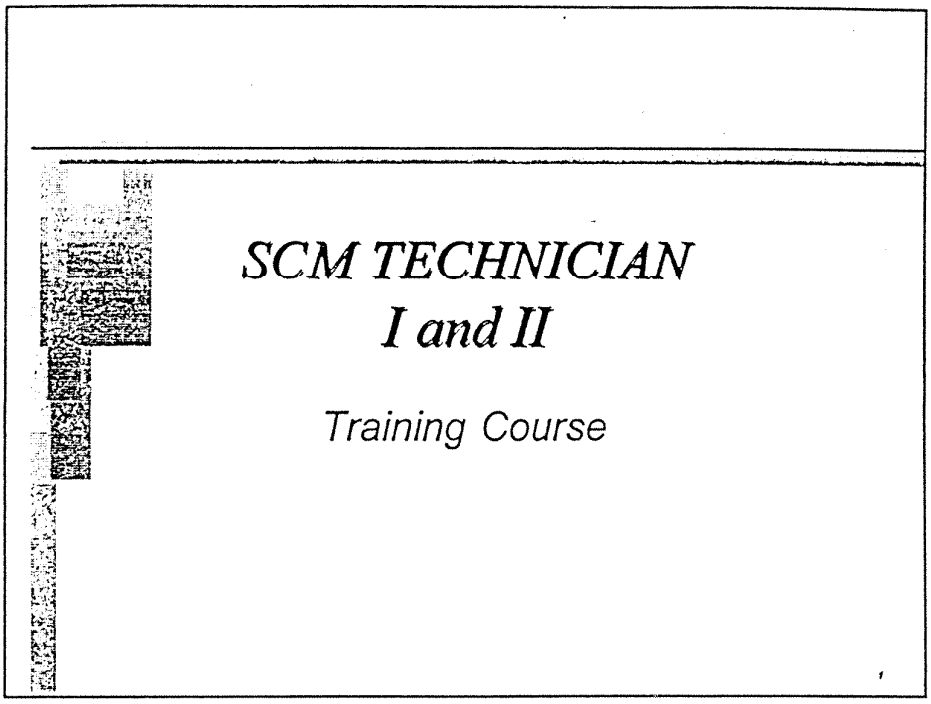
MAGNE CHARGE™

STANDARD CHARGER MODULE TECHNICIAN I / II TRAINING COURSE



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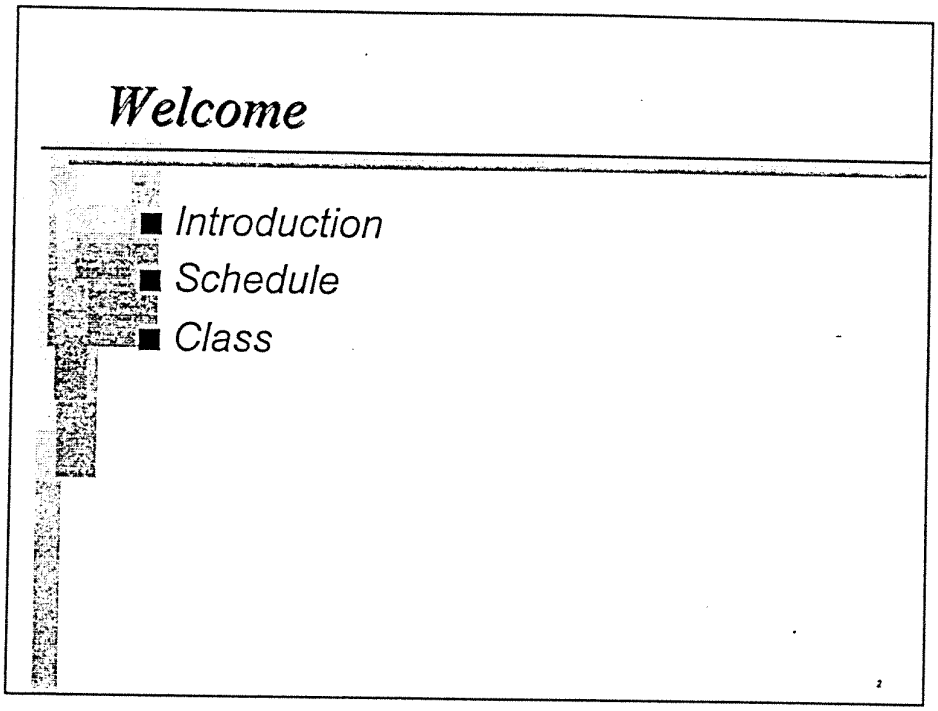

Your Instructors are _____ and _____,

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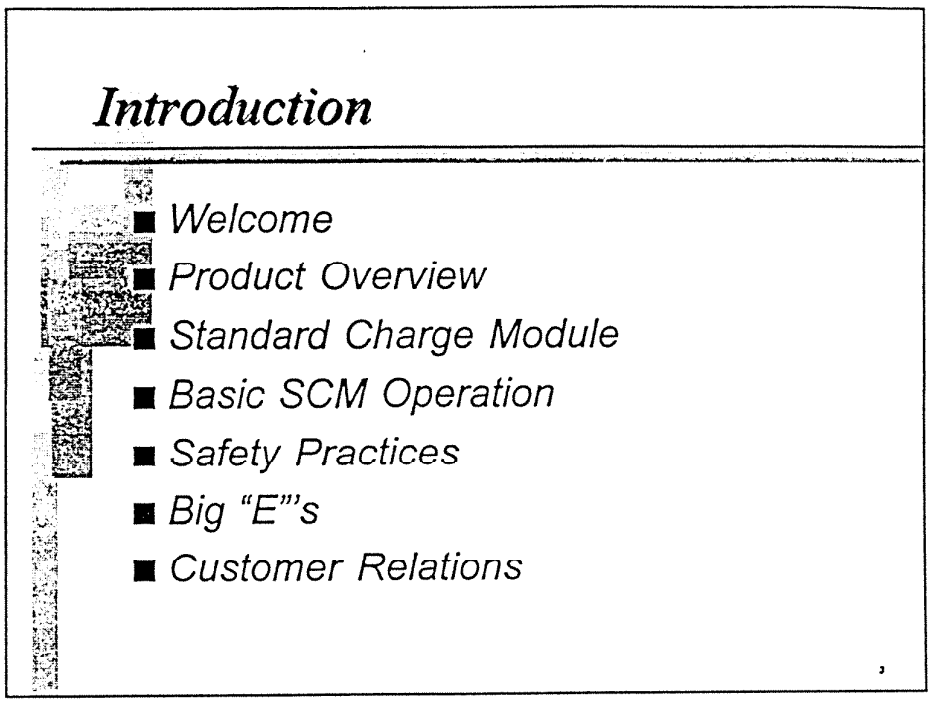

Welcome to the technician I and II training course. This course will introduce you to the MagneCharge products, operation of installation of the wall mount and floor mount chargers (SCM).

Other material covered will include introduction to EMI, ESD Safety and Customer relations.

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Schedule

- Day 1
  - Welcome
  - Product Overview
  - SCM Basic Operation
  - Safety Practices
  - Big E's
  - Customer Relations
  - Wall Mount Installation
  - Floor Mount Installation

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Schedule

- *Day 2*
  - *Hands on Training*
  - *Quick Review*
  - *Q & A*
  - *THE TEST*
  - *Graduation*

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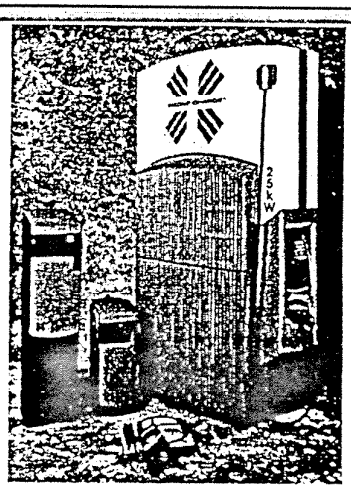
Product Line



MAGNE CHARGER 1996 -

Welcome to Magne Charger's Family

- Magne Charge has Portable, Wall mount, Floor mount and High power industrial models of inductive Chargers.
- 1.5 kW to 25 kW of charging power and beyond
- The worlds first EV chargers compliant with SAE J1773 charge standards

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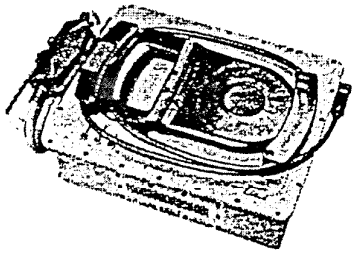
Product Overview



- *Convenience Charge Module (CCM)*
  - *Portable - Indoor/Outdoor operation*
  - *1.2 kW output*
  - *115 VAC*
  - *13 Amps*

The CCM is intended to provide a charger to be used when a primary SCM charger is not available.

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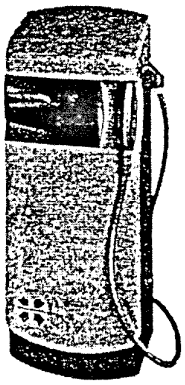
Product Overview



- *Standard Charger Module (SCM)*
  - *WM200 Wall Mount - indoor operation*
  - *6.6 kW output*
  - *208 - 240 VAC*
  - *Requires 40 amp service*
  - *Ventilation Control*

Three wire hook up - no neutral unless a pay for use system is required

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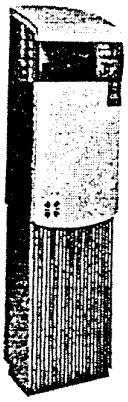
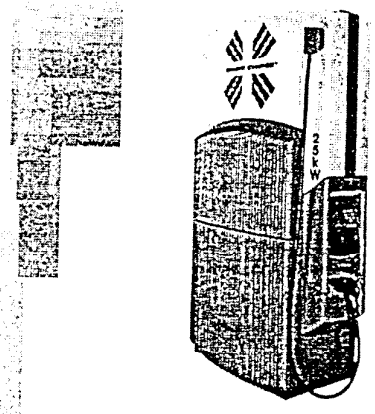
Product Overview



- *Standard Charger Module (SCM)*
  - *FM200 Floor Mount - indoor/outdoor operation*
  - *6.6 kW output*
  - *208 - 240 VAC*
  - *Requires 40 amp service*
  - *Ventilation Control*

Product Overview



- *Opportunity Charge Station - OCS 25kW*
  - *Floor mounted*
  - *440 VAC, 3 Phase*
  - *60 amps*

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High power charger for Heavy duty applications (BUSSES and Trucks) or quick charge of light duty vehicles

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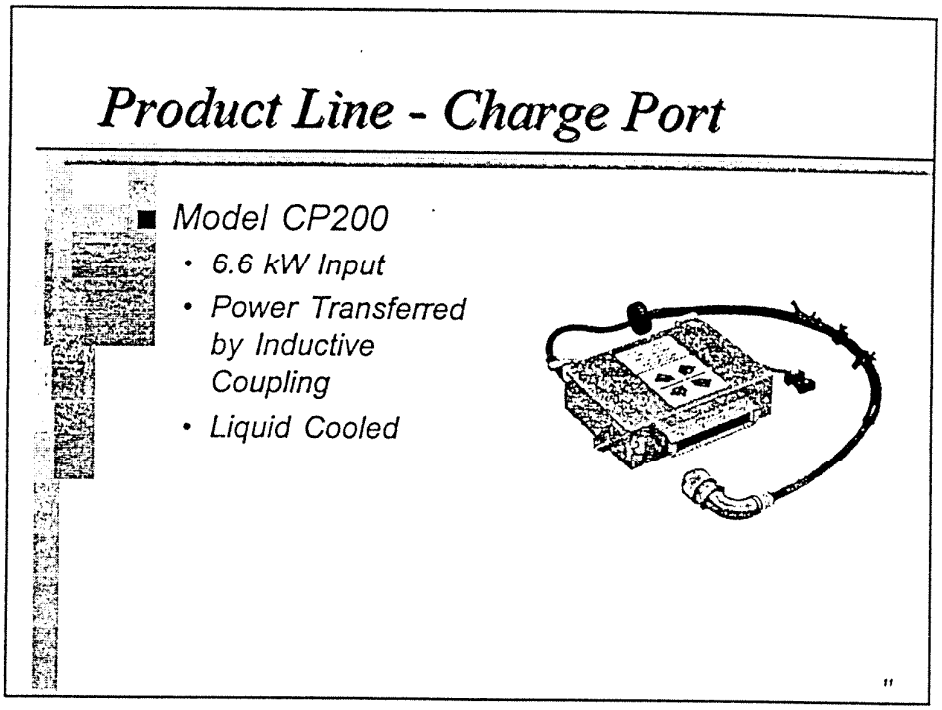

Standalone slide

This slide gives you an idea of what the charge port looks like.

The Charge port is incorporated into the vehicle and accepts the power from the charge coupler

The CP200 shown here has a DC output

Newer models (CP7100) have an AC output and requires a conversion box on the vehicle

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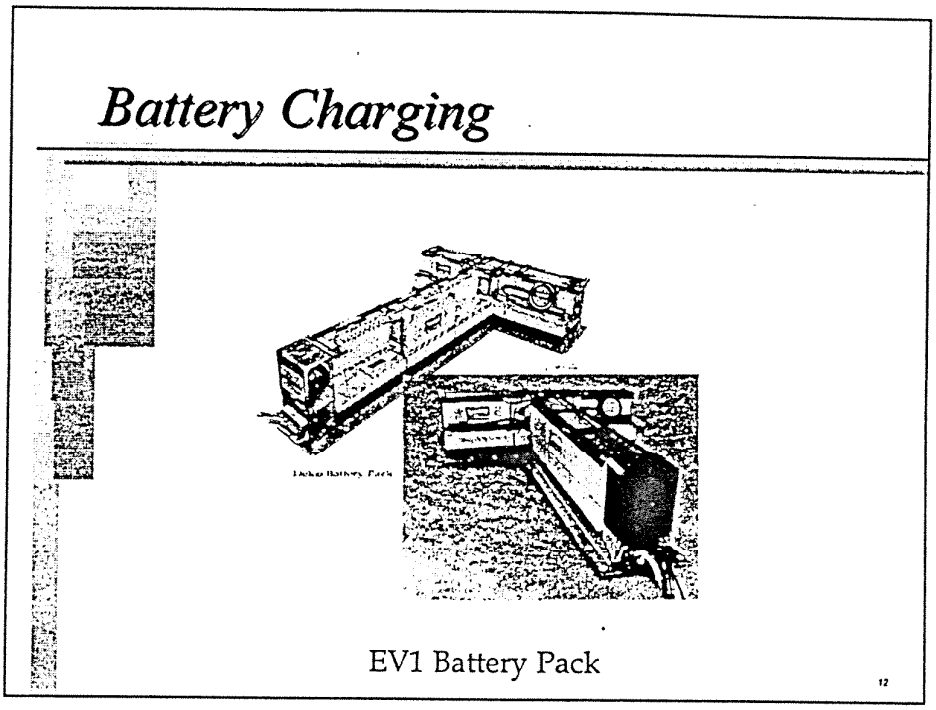

Battery pack for EV1

Point out the following

- Contactors
- Batteries - electrolyte captured in Foam
- Manual disconnect
- Battery Pack Module (BPM)

  This is the controller for the Charger-Battery pack interface. The BPM monitors the use of the stored energy and defines /controls the charging algorithm to recharge the pack.

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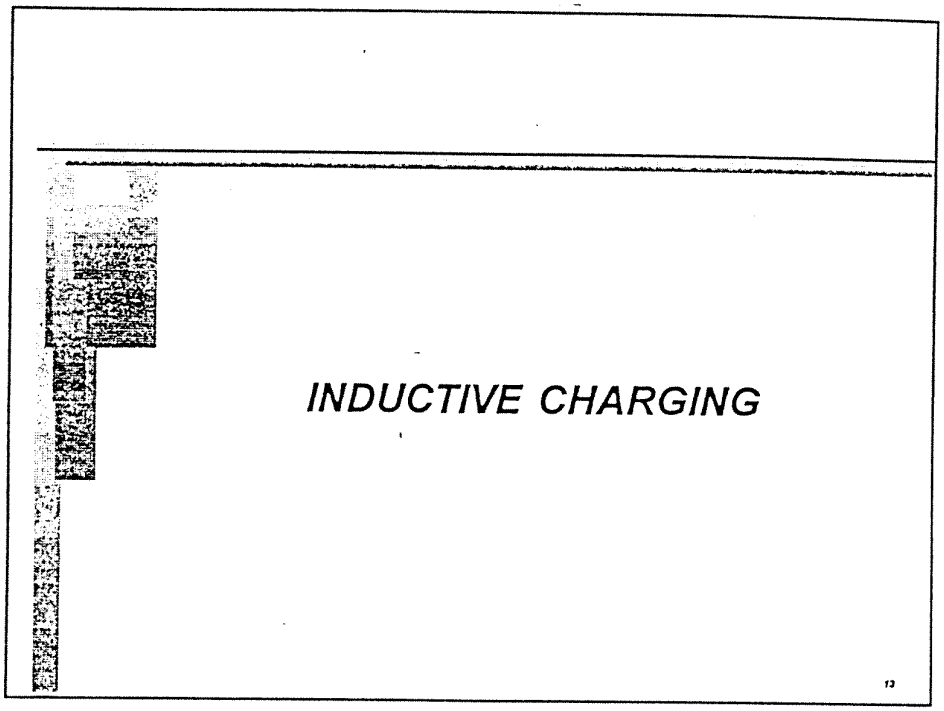

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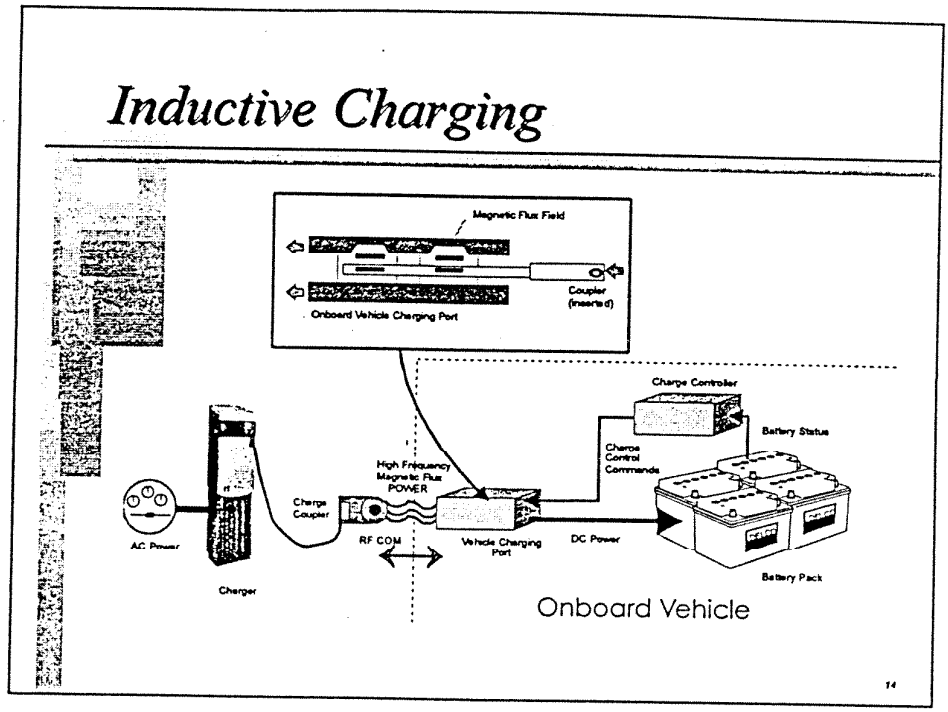

Power Input - From the service panel.

The SCM - Transforms 208-220 into Magnetic flux.

The Charge Coupler - Transfers power from the SCM.

The Charge Port Receives the Magnetic Flux from the SCM coupler and converts it to DC voltage.

The Charge controller - Battery pack module - controls the SCM to provide the correct charging voltage to the battery pack.

Battery pack

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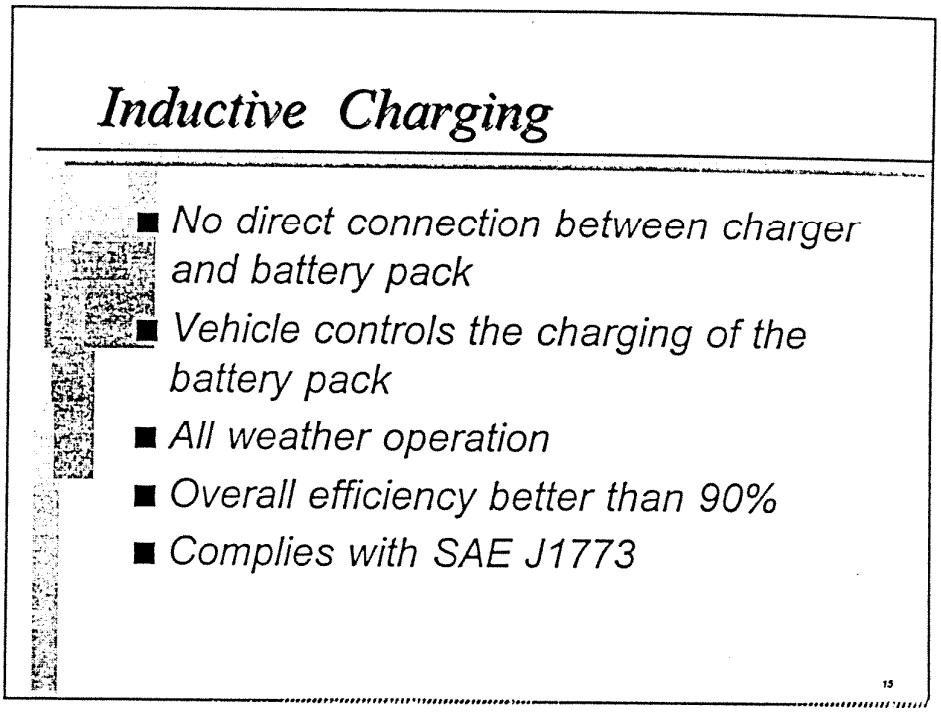
Inductive Charging
No direct connection between charger and battery pack
Vehicle controls the charging of the battery pack
All weather operation
Overall efficiency better than 90%
Complies with SAE J1773
13

So how do you transfer power to the vehicle if there is no direct connection between the charger mounted to the wall and the vehicle?

- By using a magnetic field. Embedded in the plastic paddle of the charger is a coil of wire. The vehicle charge port contains a similar coil (water cooled or air cooled). As electrical current is applied from the charger to paddle a magnetic field forms around the coil (primary windings). This magnetic field inductively couples to the coil windings in the vehicle's charge port which is then rectified and filtered and outputted as DC power to the battery pack.
- How do you control the power transferring between the charger and the battery pack, By the use of a Battery Pack Module (BPM). This controller contains a micro processor that monitors the battery pack's State Of Charge (SOC), Temperature, individual battery voltage and charging power, it communicates and controls the charger through a Radio link.
- It would be great be able to transfer power at 100% efficiency, but the laws of Physics will not allow it. with good designing of your equipment you can minimize losses to the 90 % range.
- Seven of the largest automotive manufactures under guidance of SAE and JEVA (since 1993) have worked jointly to develop requirements for inductive charging systems.

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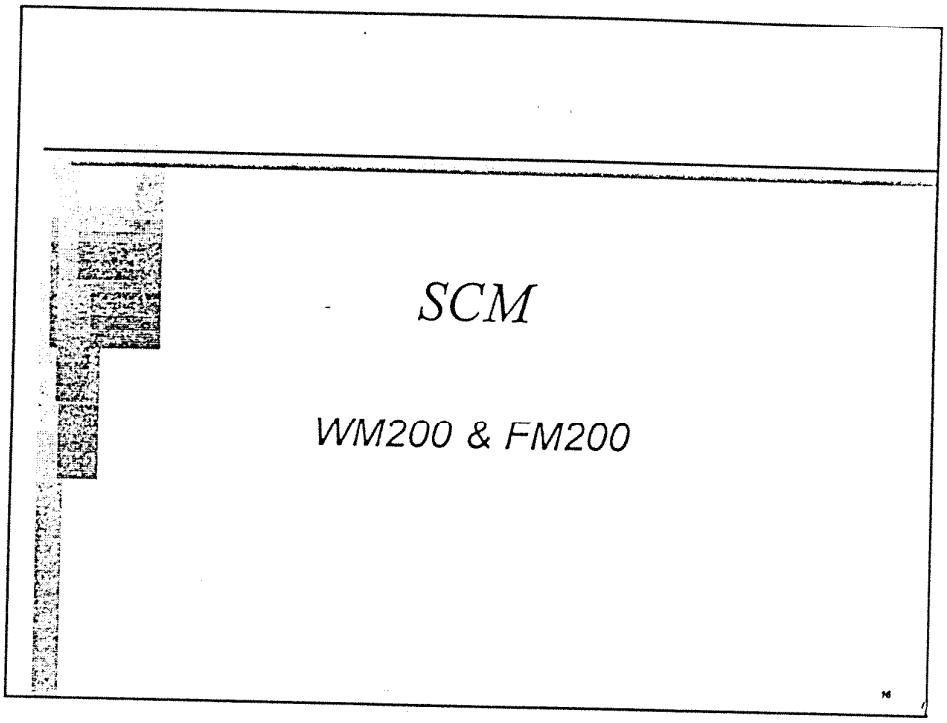

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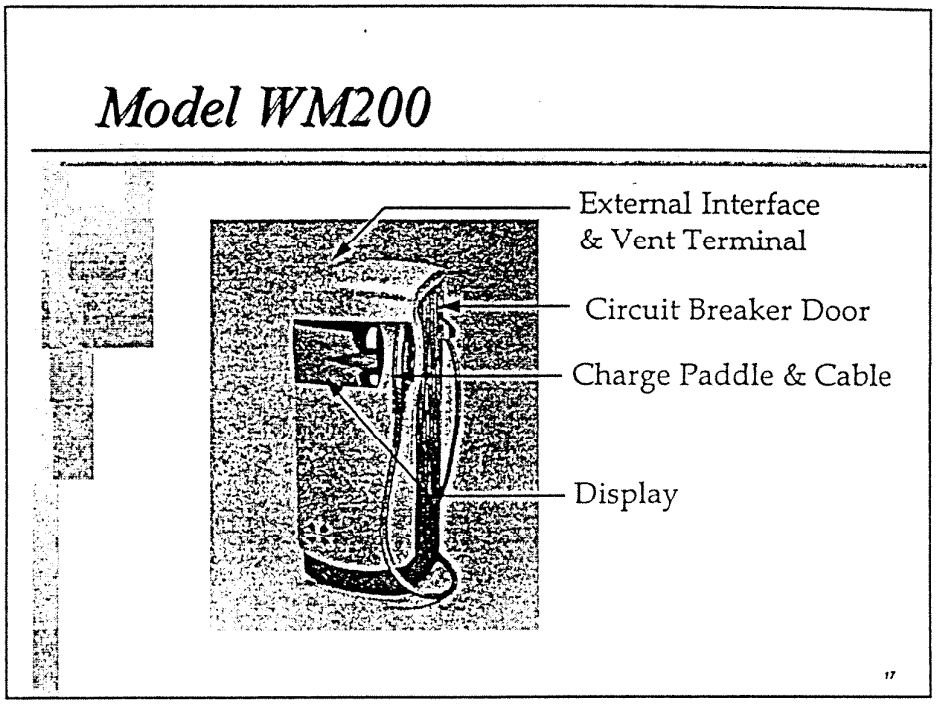

•The Input Power Pigtail (not shown) is located on the top back of the charger.

•External interface is located on the back top left corner of the charger unit - at the current time this connector (9 pin D connector) is not used

- •Uses will include Charge Buddy, Power Management and Software updating.

•The Vent Terminal board and tail is located on the back side of the charger and protrudes 1.33 inches. The electrician will connect the wiring to control the vent.

•The Display shows the status of the charger/Battery Pack during the charging cycle

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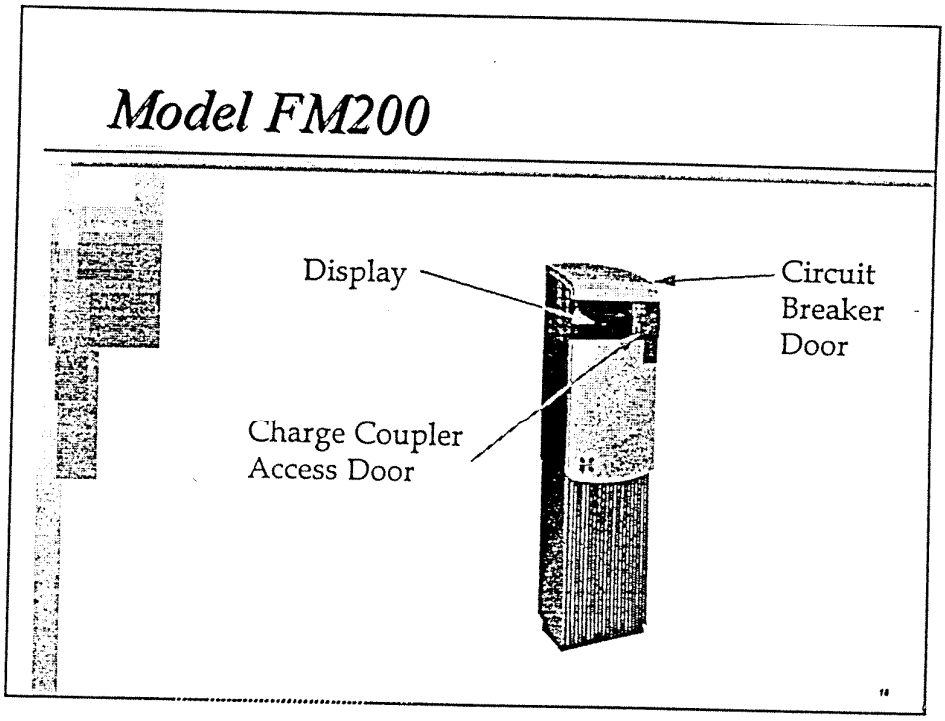
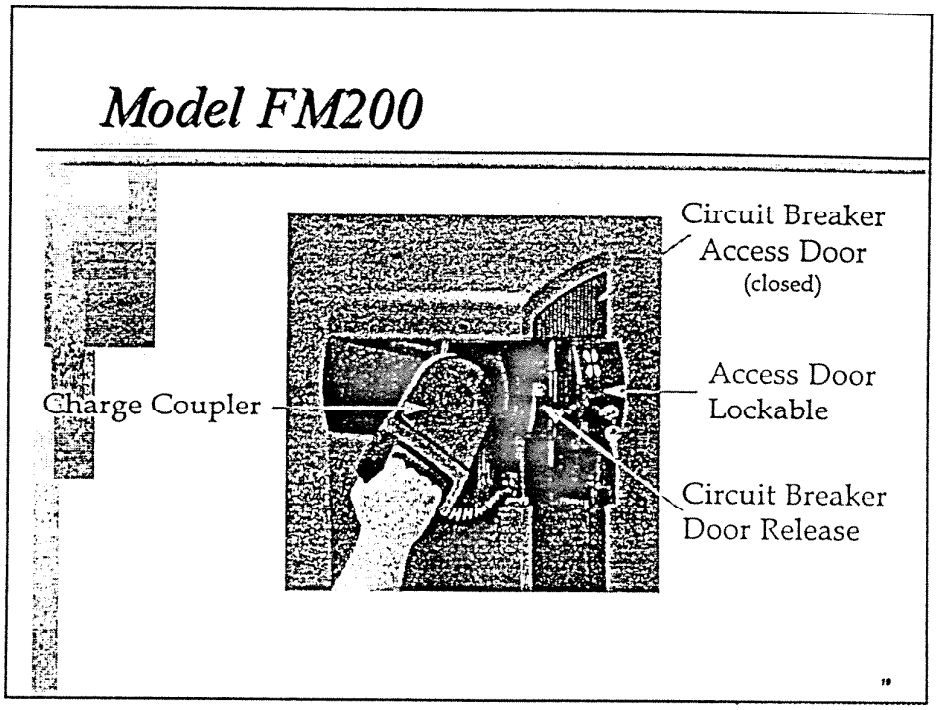
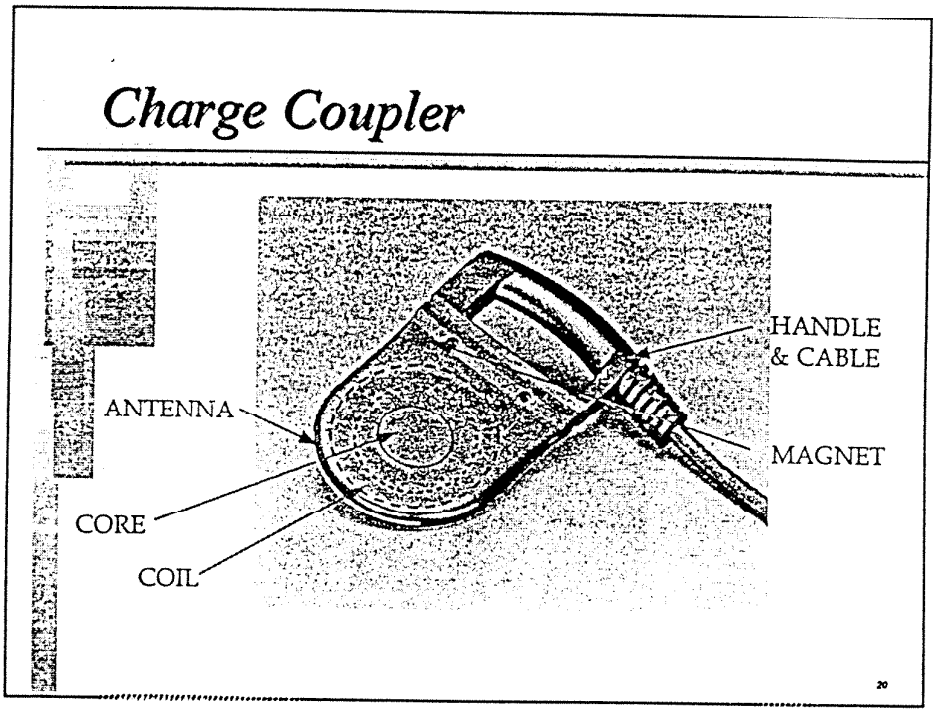


The only differences in the floor mount are a circuit breaker door which cannot be opened from the outside and a lockable charge coupler door.



Standalone slide



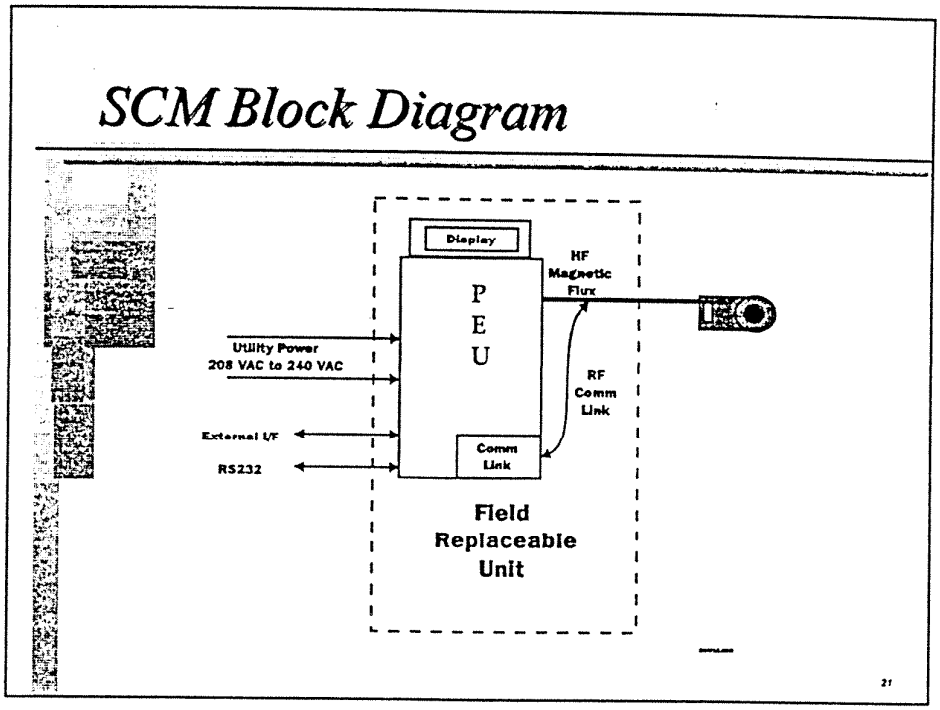
① Antenna used to complete the RF link between the charger and the Battery Pack Module

② Core or Puck which increases the efficiency of the coil

③ Coil that transfers the magnetic flux

④ Handle is plastic which is welded together to form a sealed unit the cable is molded in to the strain relief for added protection

⑤ The magnet is used to inform the vehicle's charge port that the charge paddle is fully seated and Battery Pack Module can start communicating with the charger



Standalone

1 Input power - From service panel 3 or 4 wire.

2 Ventilation interface.

3. RS232 - Maintenance use allows maintenance personnel to update the software in the SCM when required.

4 Field Replaceable Unit consists of:

a. Display unit

b. Power Equipment Unit - The heart of the charger contains all the electronics to produce and control the magnetic flux for charging

5. Coupler delivers the magnetic flux to the charge port

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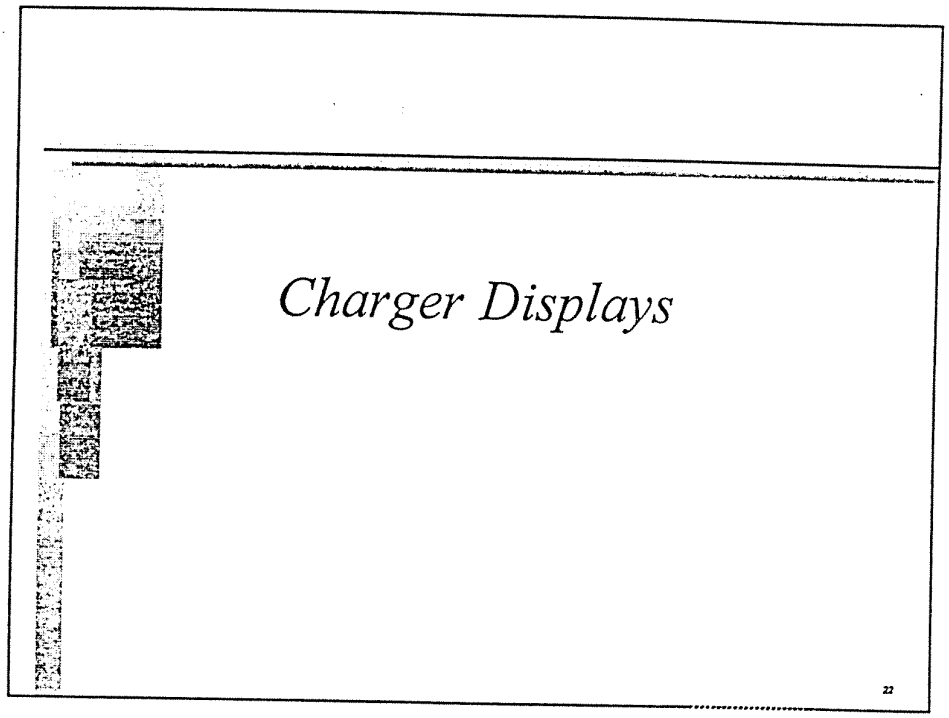

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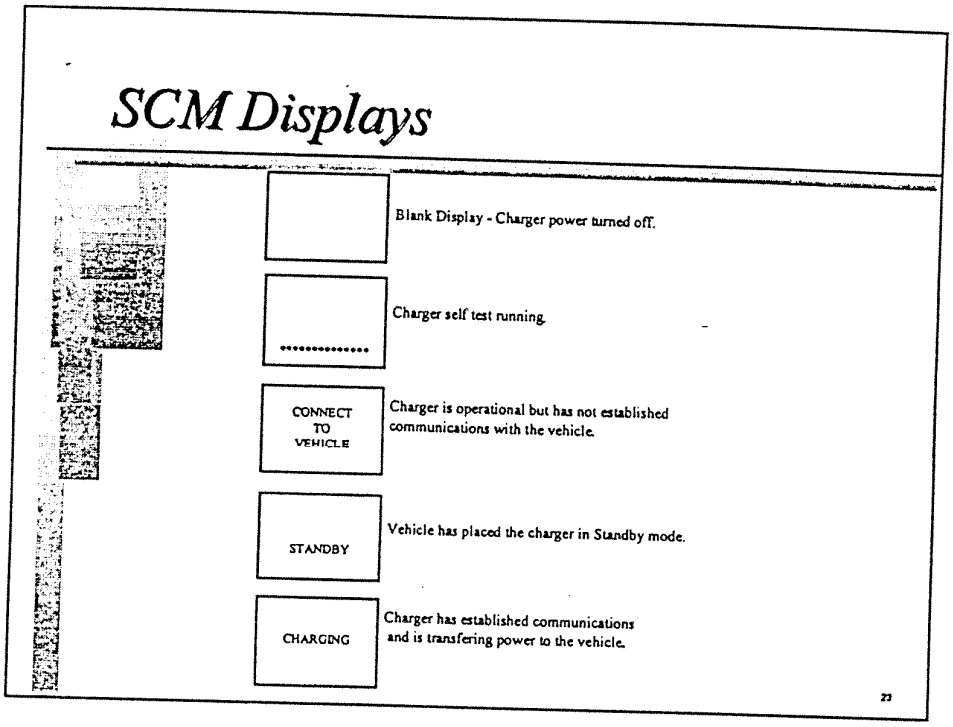
SCM Displays
Blank Display - Charger power turned off.
Charger self test running.
CONNECT TO VEHICLE
Charger is operational but has not established communications with the vehicle.
STANDBY
Vehicle has placed the charger in Standby mode.
CHARGING
Charger has established communications and is transfering power to the vehicle.
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Stand alone.

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SCM Displays

CHARGING ppX_FULL	Main battery pack State of Charge is between 0-100% and is charging.
CHARGING hhH_mmM TO FILL	Vehicle's estimated time to completion of charging (hh=Hours, mm=Minutes).

NOTE: Display will toggle between the two above diplays during charging indicating % full and time to completion.

FULL LEVELING	Main battery pack has been charged and the charger is now leveling "equalizing" the batteries.

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SCM Displays

FULL LEVELING hhH_mmM TO_GO	Main battery pack has been charged and the display indicates the length of time to complete leveling.
FULL SUPPORT	Main battery pack is fully charged and the charger is providing power to auxillary equipment in the vehicle.
FULL COMPLETE	Main battery pack is fully charged.
VEHICLE DELAY	Main battery pack is not fully charged and the charger is now in a vehicle requested DELAY mode.

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SCM Displays

VEHICLE DELAY hhH_mmM TO START	Main battery pack is not fully charged and the charger is now in a vehicle requested DELAY mode of less than 24 hours.

The following displays are fault conditions, refer to the "TROUBLESHOOTING" section for additional information.

CHECK VENT	**FAULT MESSAGE** This vehicle requires external ventilation during charging and the ventilation system was not ready.
CHECK CHARGER	**FAULT MESSAGE** Charger shutdown due to a fault condition. Contact local MagneCharge™ Sales and Service Representative.
CHECK VEHICLE	**FAULT MESSAGE** Charger shutdown due to a vehicle fault condition. Contact local vehicle Retailer Service Representative.

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ELECTROSTATIC DISCHARGE and ElectroMagnetic INTERFERENCE

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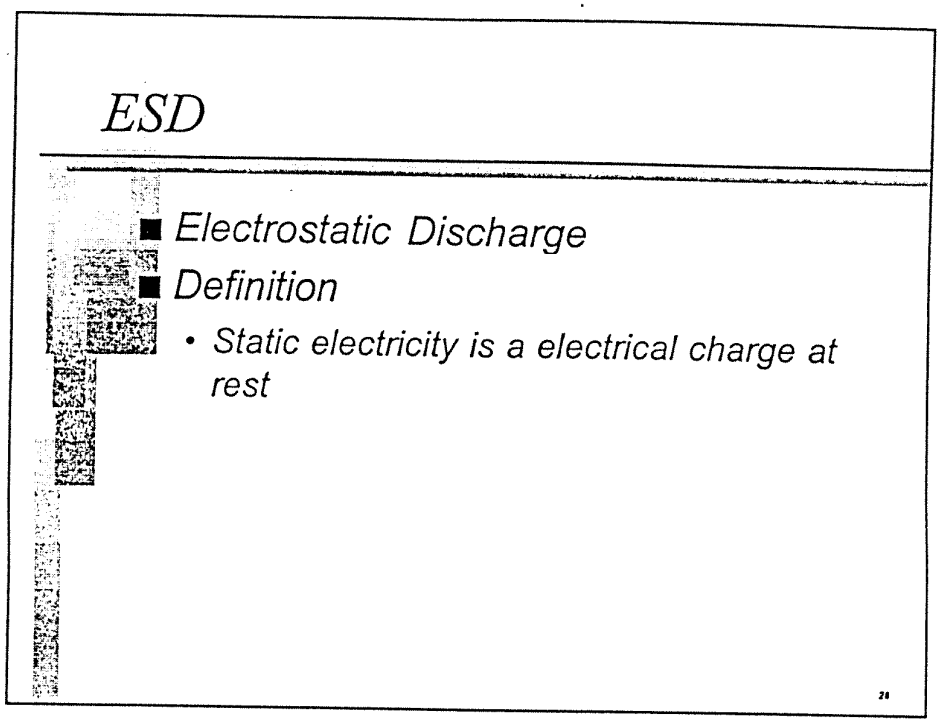


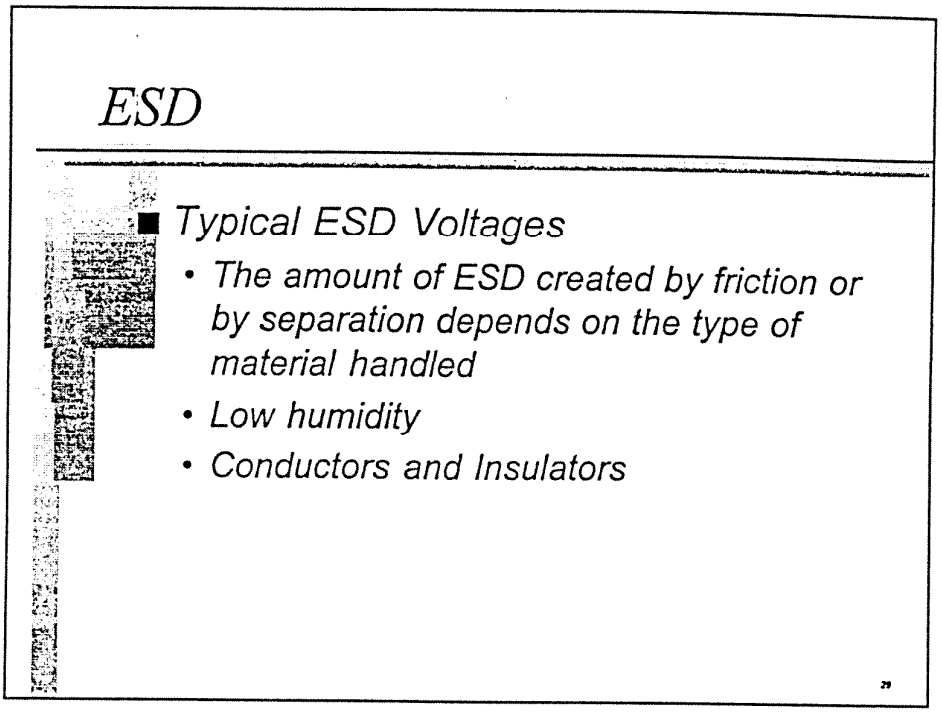
Basic Concepts in Electrostatic Discharge (ESD)

We have all seen static electricity in the form of lightning or perhaps felt the zap when reaching for a door knob. Similar types of electrical charges can have an effect on the electronic components you handle every day in your work. Unfortunately, their effect is much more hazardous and not as readily apparent.

Definition

Static electricity is an electrical charge at rest. Static electricity is most commonly created by friction and separation. Friction causes heat which excites the molecular particles of the material. When two materials are then separated, a transfer of electrons from one material to the other may take place.

As electrons transfer, the absence or surplus of electrons creates an electrical field known as static electricity. The simple separation of two materials, as when tape is pulled off a roll, can also create this same transfer of electrons between materials, generating static electrical fields.


ESD
Typical ESD Voltages
• The amount of ESD created by friction or by separation depends on the type of material handled
• Low humidity
• Conductors and Insulators

The amount of static electricity generated depends upon the materials subjected to friction or separation, the amount of friction or separation and the relative humidity of the environment. Common plastic generally will create the greatest static charge. Low humidity conditions such as those created when air is heated during the winter will also promote the generation of significant static electrical charges.

Materials that easily transfer electrons (or charge) between atoms are called conductors and are said to have "free" electrons. Some examples of conductors are metals, carbon and the human body's sweat layer. Materials that do not easily transfer electrons are called insulators. Some well known insulators are common plastics, glass and air. Both conductors and insulators may become "charged" with static electricity. When a conductor is charged, the free electrons give it the ability to discharge rapidly when it comes close to another conductor with a different potential.

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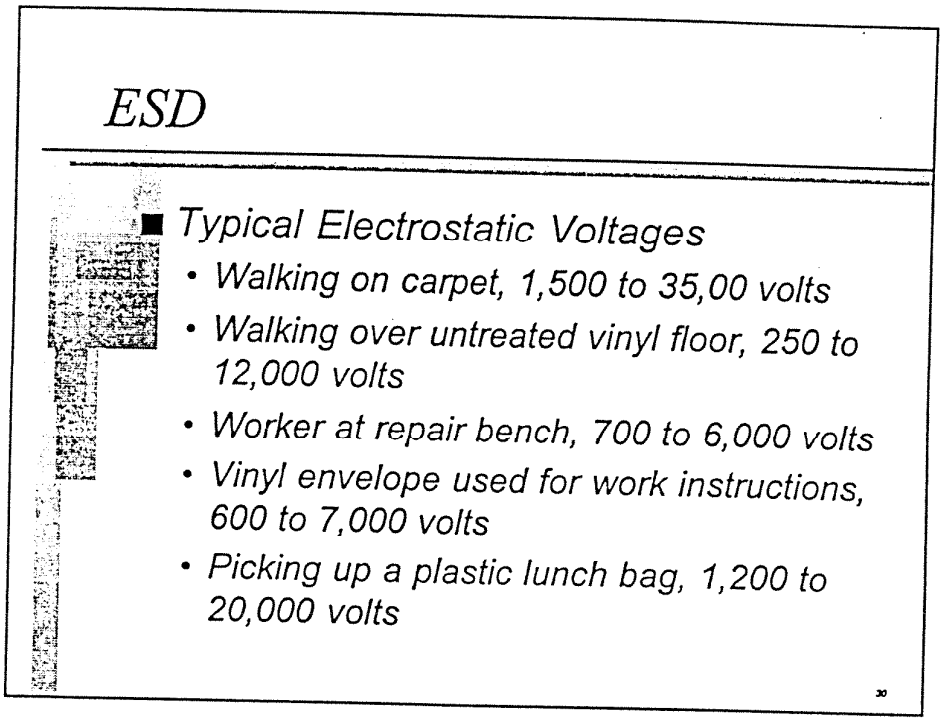
ESD
Typical Electrostatic Voltages
• Walking on carpet, 1,500 to 35,00 volts
• Walking over untreated vinyl floor, 250 to 12,000 volts
• Worker at repair bench, 700 to 6,000 volts
• Vinyl envelope used for work instructions, 600 to 7,000 volts
• Picking up a plastic lunch bag, 1,200 to 20,000 volts

Typical Electrostatic Voltages

Many of the common activities you perform daily may generate charges on your body that are potentially harmful to components.

Some of these activities include:

* Walking across a carpet, 1,500 to 35,000 volts
* Walking over untreated vinyl floor, 250 to 12,000 volts
* Worker at a bench, 700 to 6,000 volts
* Vinyl envelope used for work instructions, 600 to 7,000 volts
* Picking up a common plastic bag from a bench, 1,200 to 20,000 volts

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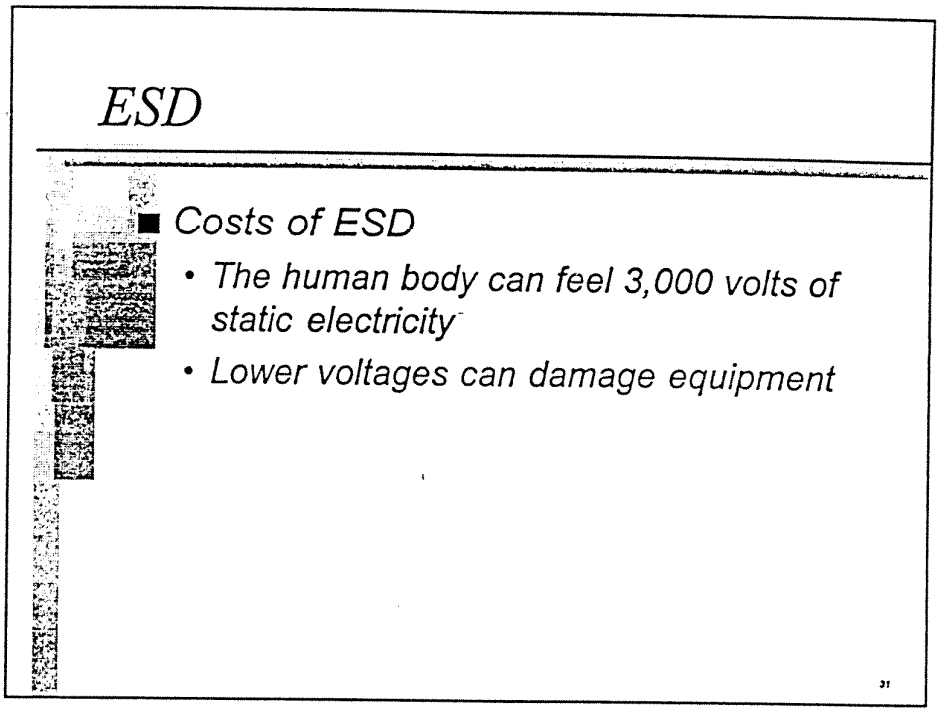


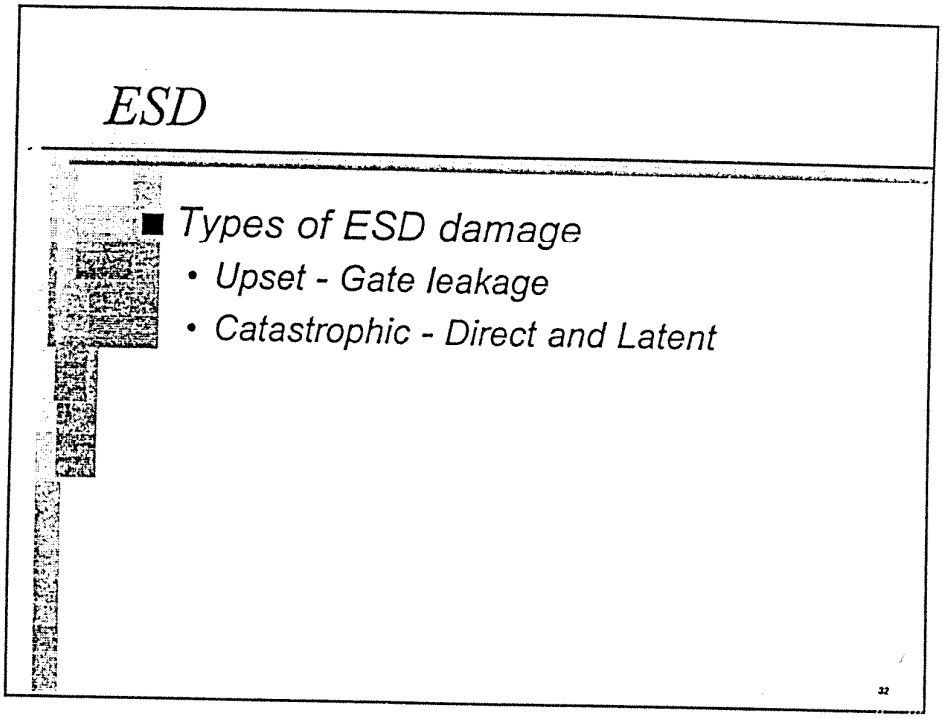
Costly Effects of ESD

When you feel a static shock, you are experiencing a minimum of 3,000 volts of electricity.

This "shock" known as Electro Static Discharge or ESD also may be responsible for damaging many of the rejected electronic components in your company.

While you can feel electrostatic discharges of 3,000 volts, smaller charges are below the threshold of human sensation. Unfortunately, smaller charges can and do damage semiconductor devices. Many of the CMOS technology components used in your facility can be damaged by charges of less than 1,000 volts. Some of the more sophisticated components can be damaged by charges as low as 10 volts. You should be aware of the relative sensitivity to ESD damage of devices you may be working with.

As electronic technology advances, electronic components tend to become smaller and smaller. As the size of the components is reduced, so is the microscopic spacing of insulators and circuits within them, increasing their sensitivity to ESD. As you can predict, the need of proper ESD protection increases everyday.



Types of ESD Damage

Static damage to components can take the form of upset failures or catastrophic failures.

* Upset failures - result in gate leakage
* Catastrophic failures - occur in two forms, Direct and Latent

Direct catastrophic failures occur when a component is damaged to the point where it is DEAD NOW and it will never again function. This is the easiest type of ESD damage to find since it usually can be detected during testing.

Latent failures occur when ESD weakens or wounds the component to the point where it will still function properly during testing, but over time the wounded component will cause poor system performance and eventually complete system failure. Because latent failures occur after final inspection or in the hands of your customer, the cost for repair is very high. Not only is this type of damage hard to find, but it severely affects the reputation of your company's product.

An upset failure occurs when an electrostatic discharge has caused a current flow that is not significant enough to cause total failure, but in use may intermittently result in gate leakage causing loss of software or incorrect storage of information.

Upset or latent failures may pass your company's quality control testing program. In other words, static damage may occur that cannot be felt, seen, or detected through normal testing procedures.

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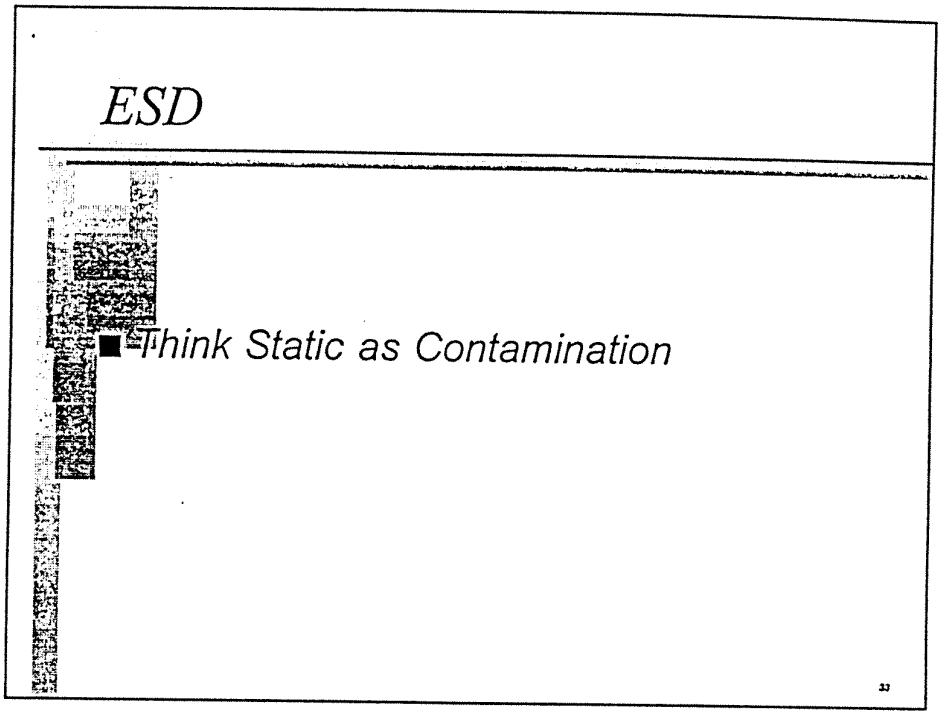

Think of Static As Contamination!

Damage caused by invisible and undetectable events can be understood by comparing ESD damage to medical contamination of the human body by viruses
or bacteria. Although viruses and bacteria are invisible, they can cause severe damage even before you can detect their presence. A defense against this invisible threat is sterilization.

As an employee, the hidden threat of electrostatic discharge or ESD should be of great concern to you. ESD damage can significantly reduce your company's profitability. This may affect your profit sharing, your company's ability to compete in the market place and even your employment. Everyone likes to take pride in their work, but without proper ESD controls, your best efforts may be destroyed by static electricity that you can neither feel nor see.

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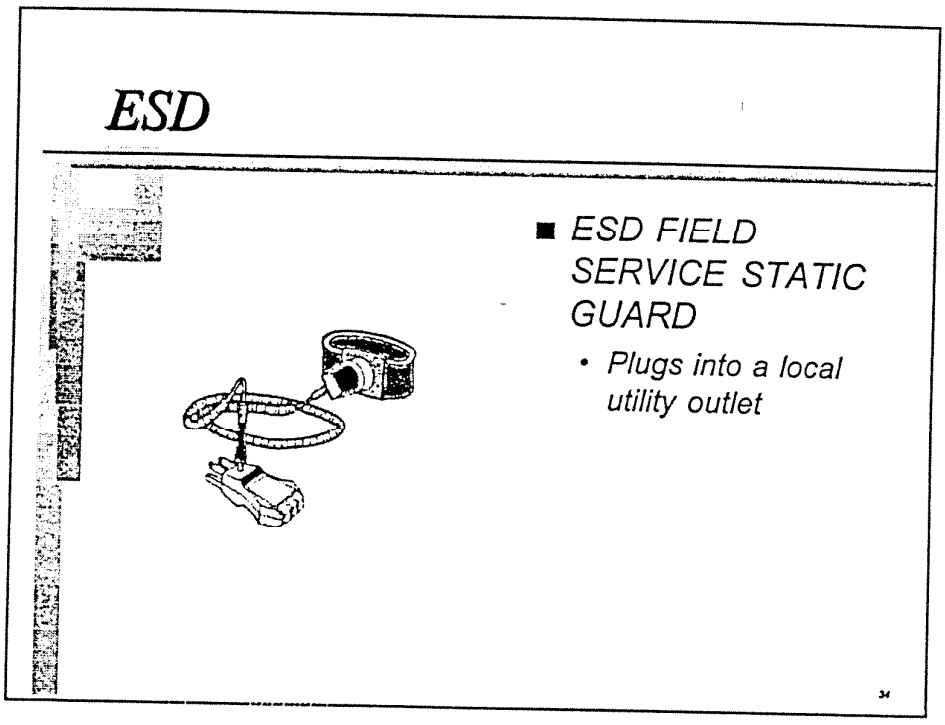
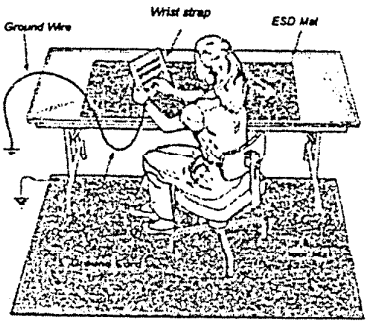


This handy device plugs in to a local utility outlet. The device will indicates a hard ground when plugged into 125 V receptacle.

Manufactured by IDEAL

ESD



- *ESD System for bench work*

Complete work station

Floor mat

Table Mat

Wrist Strap and cord

Ground wires to building ground

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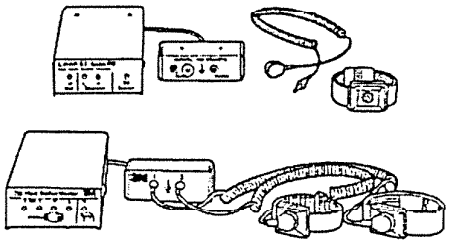
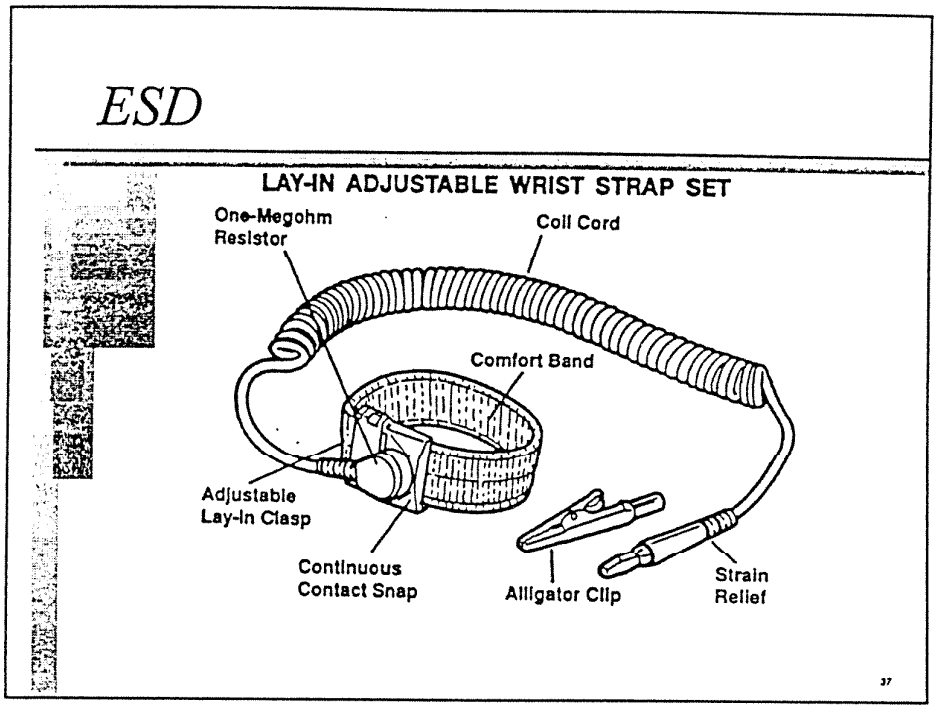
ESD



Monitors resistance of workstation, operator and wiring connections. Provides instant notification of static control equipment failures. If operator exceeds 10 megohms or wiring connections exceed 3 megohms, audible and visual alarms are sounded. Dual conductor ground paths provide redundancy, keep operator grounded if one should fail. Complete with resistance monitor, remote dual conductor jack, AC adaptor, four mounting screws, wire management clips and instructions. Power: 120VAC. Test voltage: 18VDC. Test current: 5μA.

All strap and mats should be tested prior to use every time. This can be done by using a Ohm meter or an automated system as shown. This system will provide a continuous check during use.



The standard wrist strap is one of the tools used to prevent ESD damage to your equipment.

Other tools that you can use are

- •Static dissipative surface covering
- •ESD floor and table mates
- •Electric ionized air blower
- •Heel or toe grounding assemblies
- •Static-Shielding Bags
- •Velostat pin insertion grade foam for components storage

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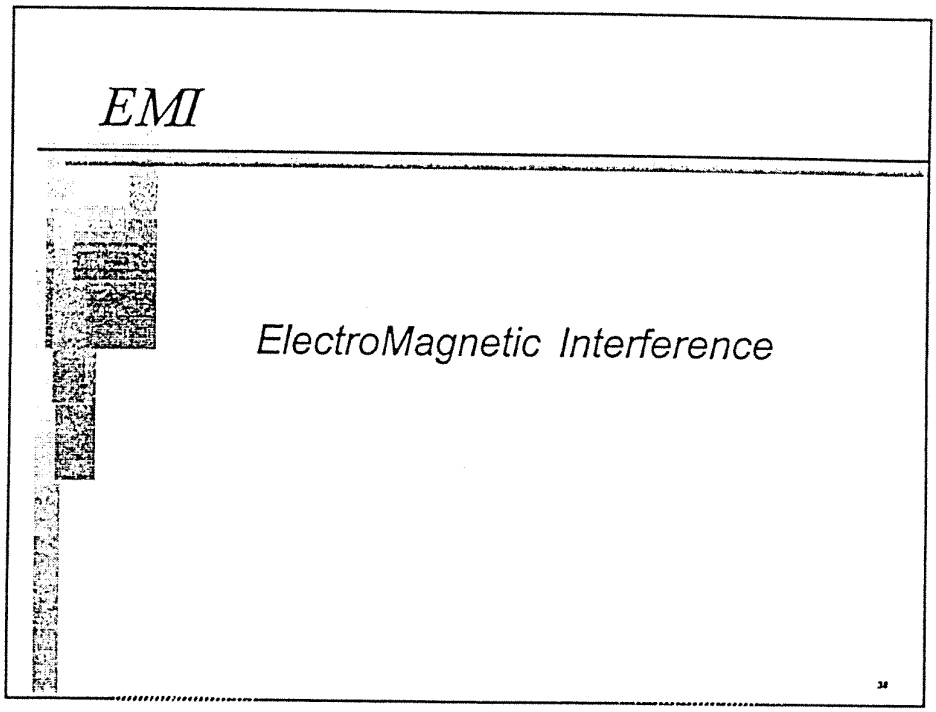

The Chargers are constructed to shield against EMI interferance.

EMI can cause operational or noise on all types of electrical equipment.

- Cordless phones
- Radios, TVs

When disassembling or assembling the the charger insure that all parts fit properly.

Insure that all metal assemblies are not bent, creased or damaged or screw holes are not elongated or deformed.

Inspect EMI gaskets when servicing an area that has the EMI gaskets installed

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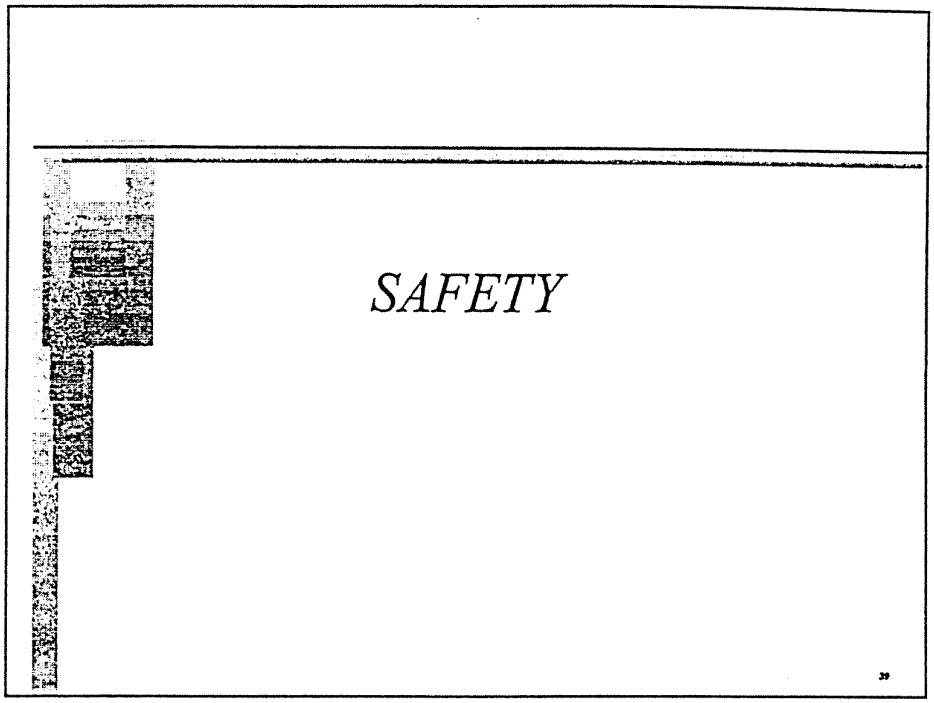

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Safety

- *No Exposed Contacts*
- Built-In Ground Fault Circuit Interrupter (GFCI) Function
  - UL 943 Class A Limits (5 ma Trip Current)
- Charger Grounded per NEC
- User Protected from On-Vehicle Faults by Electrical Isolation in Inductive Coupling

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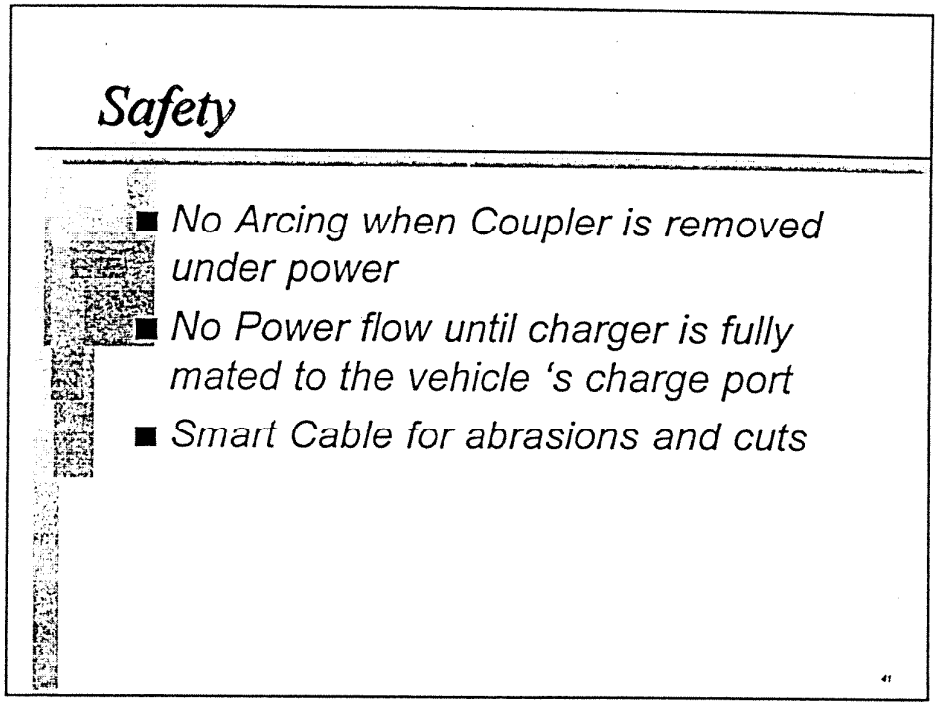
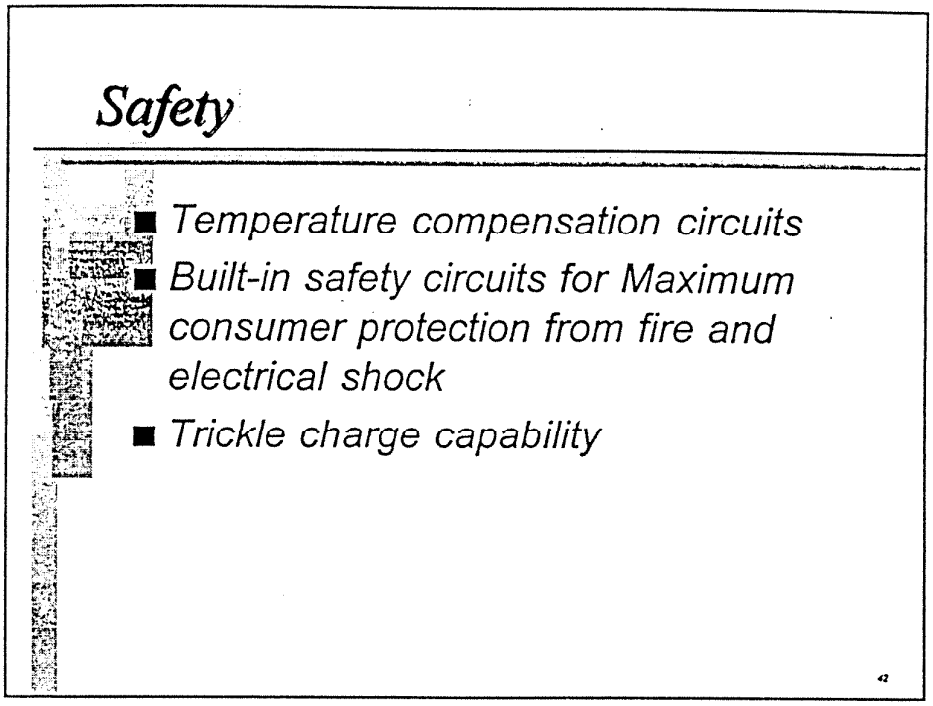

Safety
No Arcing when Coupler is removed under power
No Power flow until charger is fully mated to the vehicle 's charge port
Smart Cable for abrasions and cuts

•Standalone


Safety
Temperature compensation circuits
Built-in safety circuits for Maximum consumer protection from fire and electrical shock
Trickle charge capability

•Standalone

Safety

- Double Insulation of Power Conductors in Charge Coupler
- Output Cable Rated for Extra Hard, Outdoor Usage
- Output Cable Includes Grounded Metallic Shield Around Power Conductors
  - Severe Cable Damage/Vandalism Causes Power Conductors to Short to Grounded Shield, Not Person

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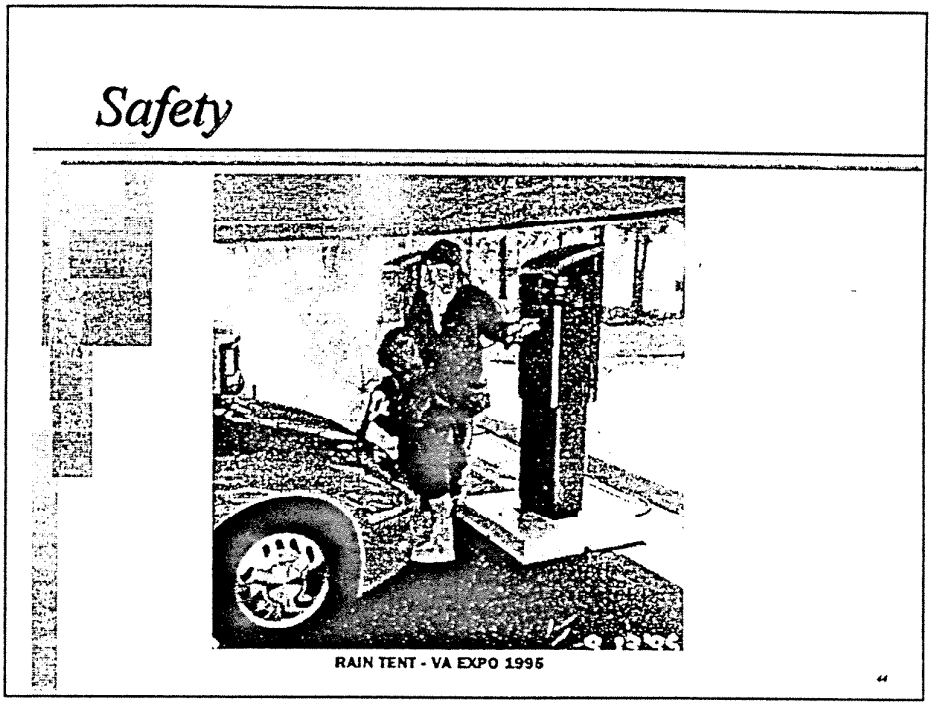
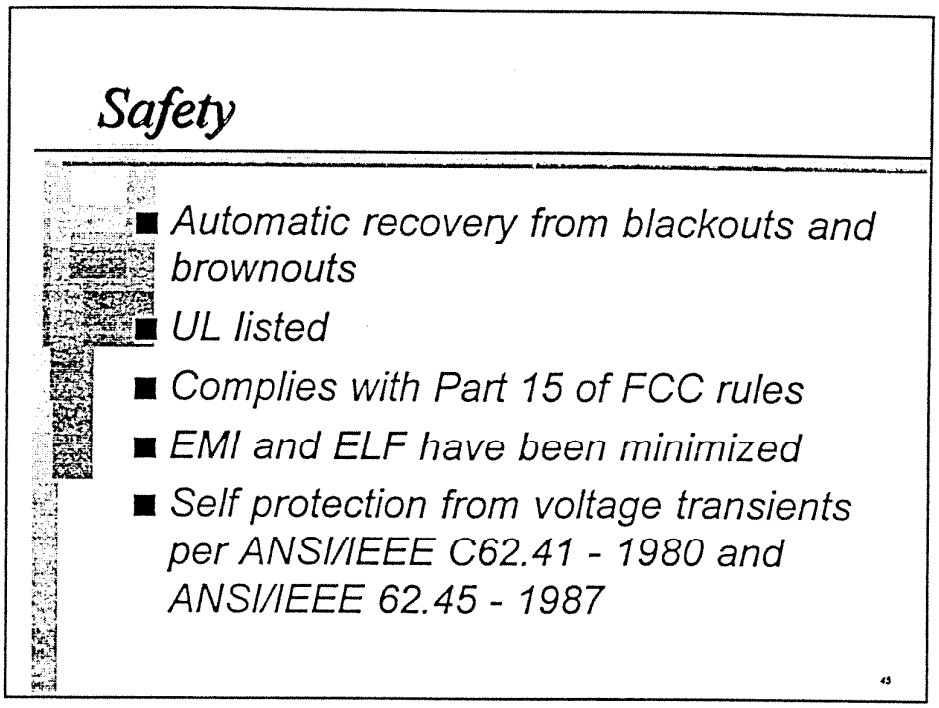


This photo contains one preview vehicle in a simulated rain storm inside a tent at the VA Power EXPO. Using standard sprinkler heads (6 gal per min.) there was a good rain storm on this sunny day - Note the Guy in shorts in the background.


Safety
Automatic recovery from blackouts and brownouts
UL listed
Complies with Part 15 of FCC rules
EMI and ELF have been minimized
Self protection from voltage transients per ANSI/IEEE C62.41 - 1980 and ANSI/IEEE 62.45 - 1987
45

•Standalone

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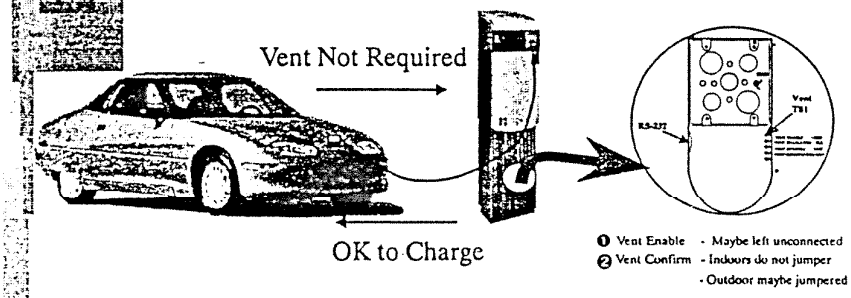
Safety - Ventilation Control

- Built-In Ventilation Control Circuitry to Prevent Battery Gas (e.g. Hydrogen) Buildup During Indoor Charging
- Wall Mount and Floor Mount Chargers Control External Ventilation System Based on "Ventilation Required/Not Required" Inputs from Vehicle

Ventilation Control: EVs with Non-Gassing Batteries



❶ Vent Enable - Maybe left unconnected
❷ Vent Confirm - Indoors do not jumper
- Outdoor maybe jumpered

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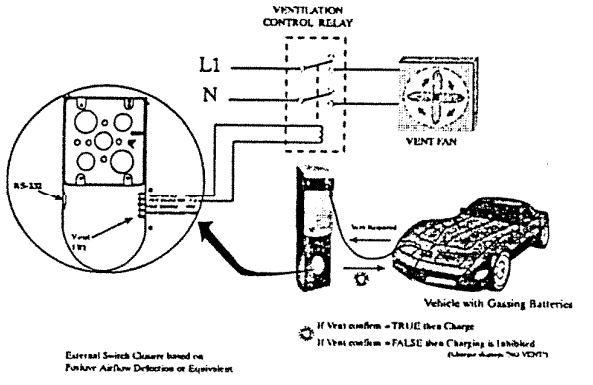
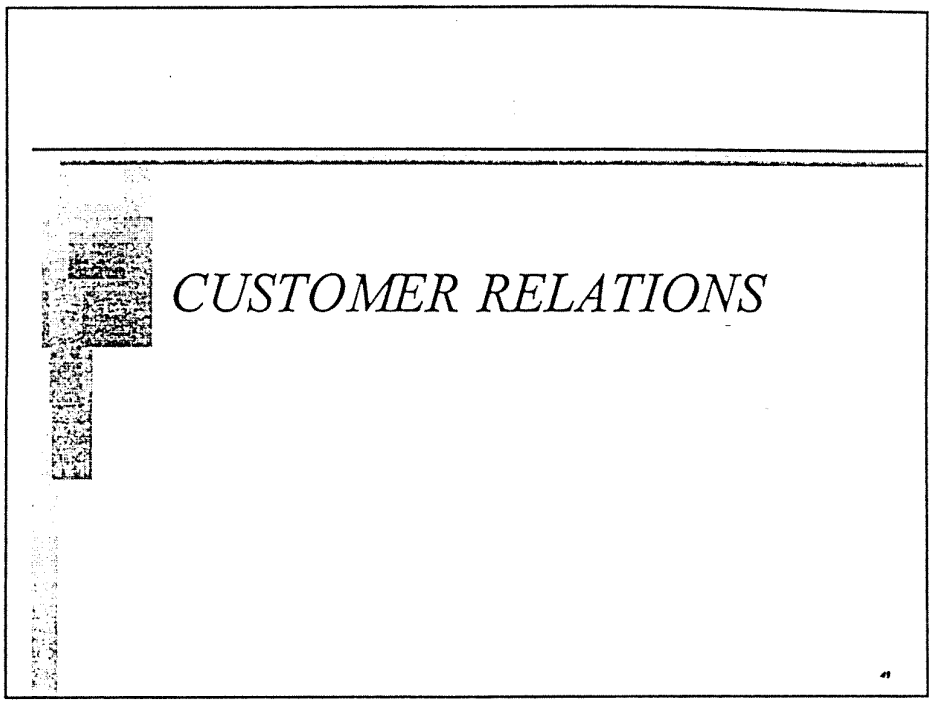
Ventilation Control: EVs with Gassing Batteries





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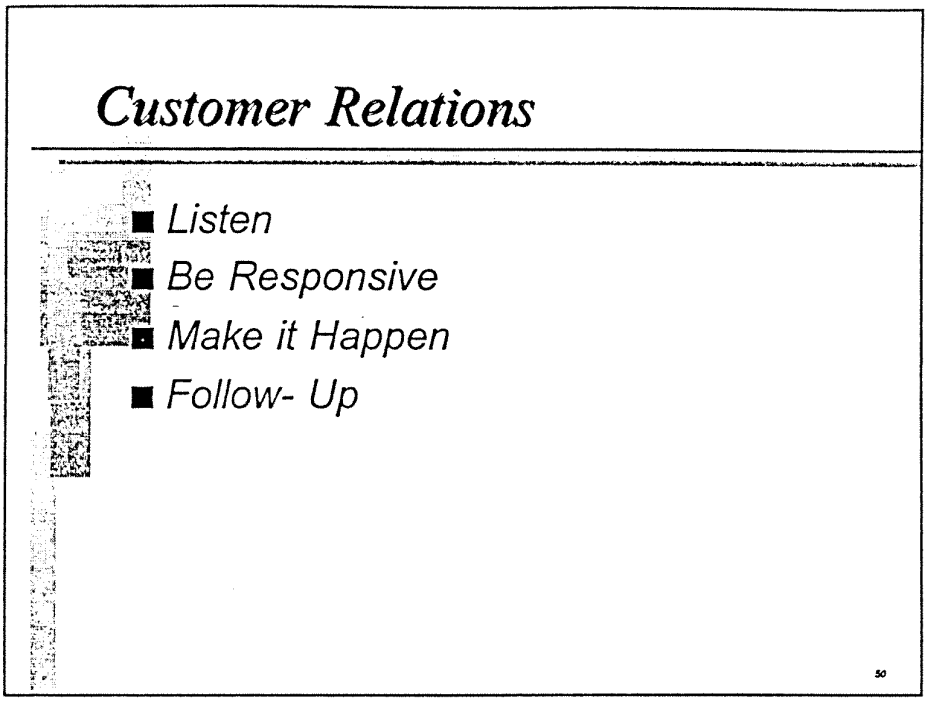


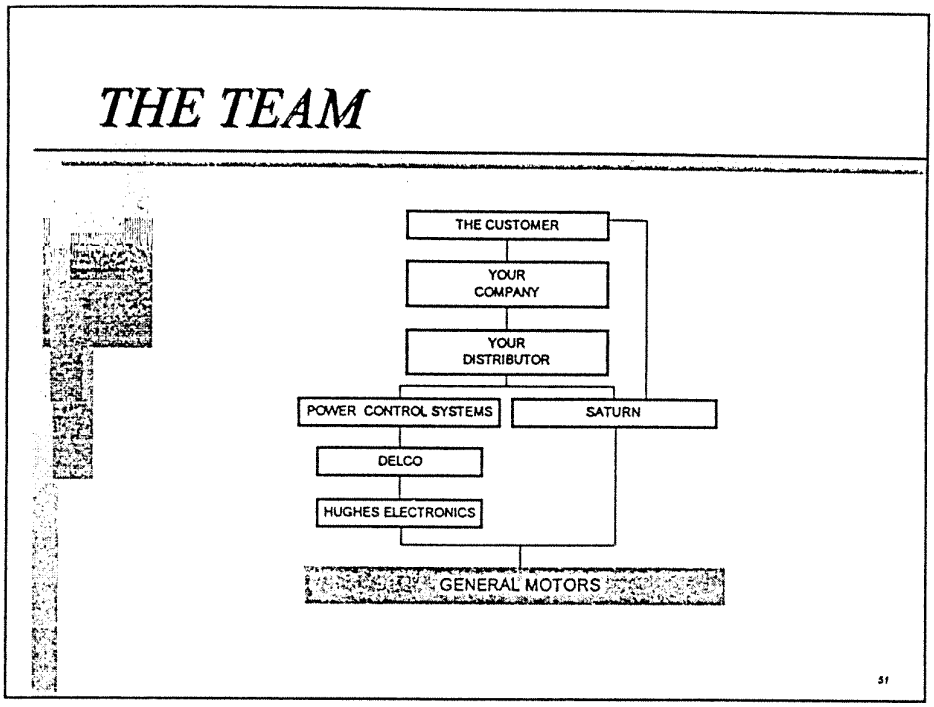
Listen to your customer-...don't assume ; ask ...seek to understand their point of view, desires and expectations

Build a strong working relationship with the customer. treat the customer like you would like to be treated.. Be honest and timely, if you promise something then do it. Explain what you can do and cannot do . If you can do something within your power , do it. if IT IS NOT THAT SIMPLE then involve someone with more authority.

Ask open-ended questions which begin with, who, what, where, when, why or how.

Remember your a part of a large team effort .When performing an installation / service call you are the team's representative.

Follow -up With the customer to ensure that their exceptions were met or exceeded



As you can see your are one of the few people of this large team that has direct contact with the customer.

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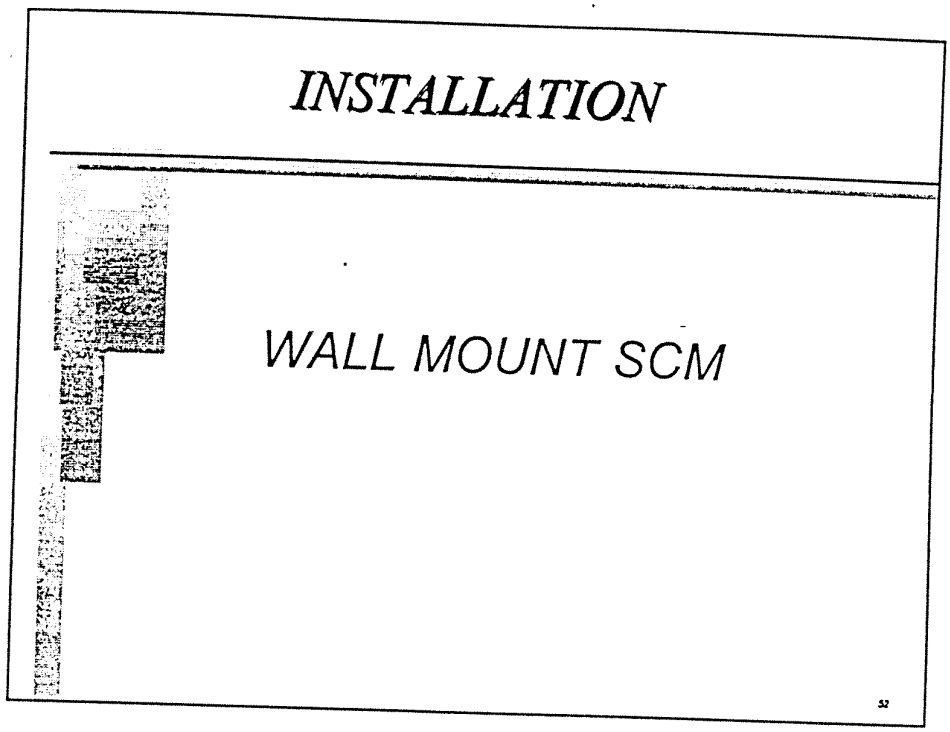

This section will look at the installation of the Wall Mount SCM.

- Safety notes
- Installation notes
- Walk through of the Wall Mount Installation Guide

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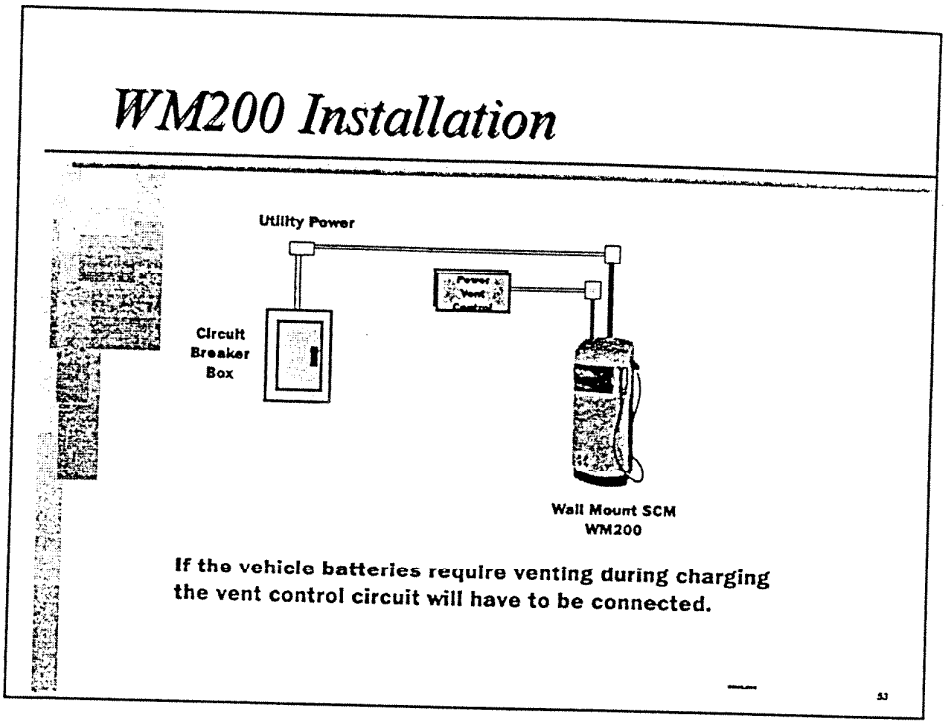
WM200 Installation
Utility Power
Circuit Breaker Box
Wall Mount SCM WM200
If the vehicle batteries require venting during charging the vent control circuit will have to be connected.
53

Typical installation of the WM200

- If unit will not power up - Check circuit breaker box to see if customer did not turn off the circuit breaker. This is quite common
- Vent system is not provided by Magne Charge

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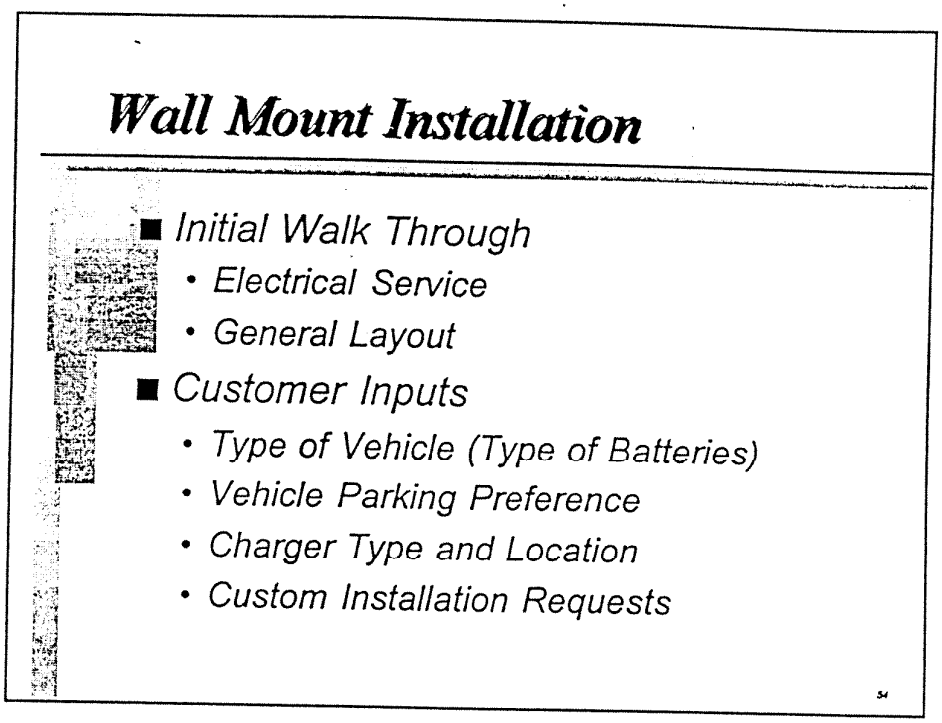

Initial Walk through

This is one of the most critical questions facing the installation team.

Several factors effect the location of the charger:

Location and capacity of existing service.

Location of the Vehicle's charge port.

Where the customer wants to park the Vehicle.

Usable length of the charger's coupler cable (**6.5 ft).**

This section is under Customer Relations.

The Site Evaluator will have to explain to the customer that there are certain limitations as to where the charger may be installed and that the cable length can not be lengthened.

Other issues that may be addressed is a request for the conduit to be routed inside a finished wall.

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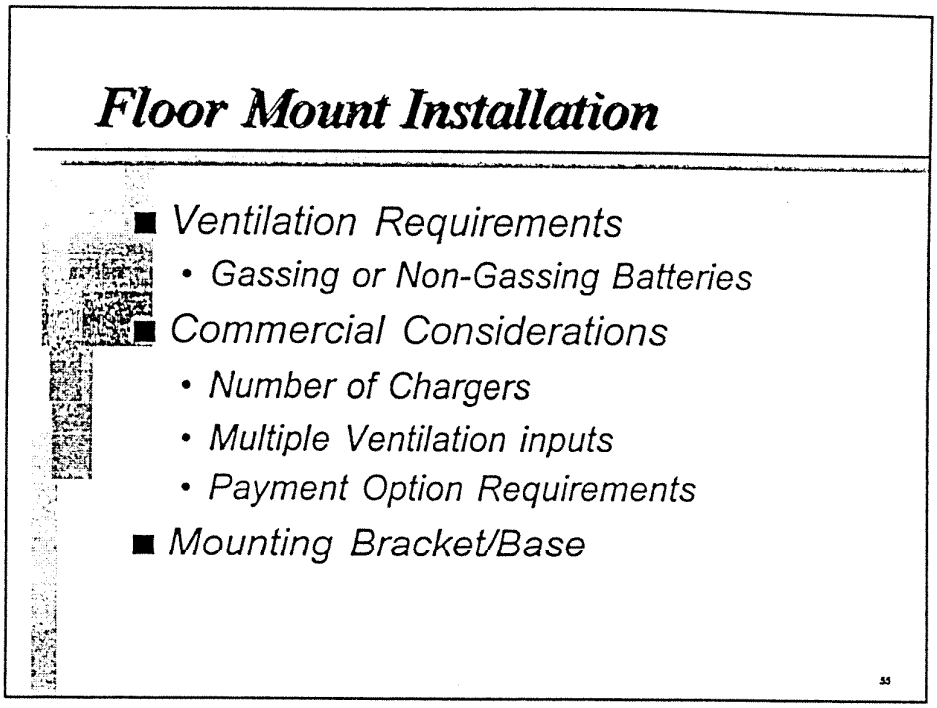

First lets talk about Batteries - Electric Vehicles Batteries come in two basic types: Batteries that Gas during charging, and Batteries that do not gas during charging

Operation of SCM -Gassing Batteries

Turn on the SCM and plug the charger into the charge port.

Vehicle's BPM will establish the communications link with the SCM.

The BPM will tell the SCM that the vehicle's battery pack will require ventilation.

The SCM will turn on the Ventilation system.

The SCM checks the Vent Confirm Signal from the Ventilation system.

If the Vent Confirm is "true" then the charger will apply power to the charge port, if the vent confirm signal is "false" then the charger will not apply power to the charge port.

Commercial Installations have their own requirements, number of chargers installed, location and payment systems. If the chargers are going to be installed indoors the issue of ventilation systems would have to be addressed (indoor / outdoor).

The issues of mounting brackets / bases for the chargers will be dependent upon the ventilation requirements and the location the charger s are to be installed.

Payment option systems may require a neutral wire to be installed to provide the 125 V to operate.

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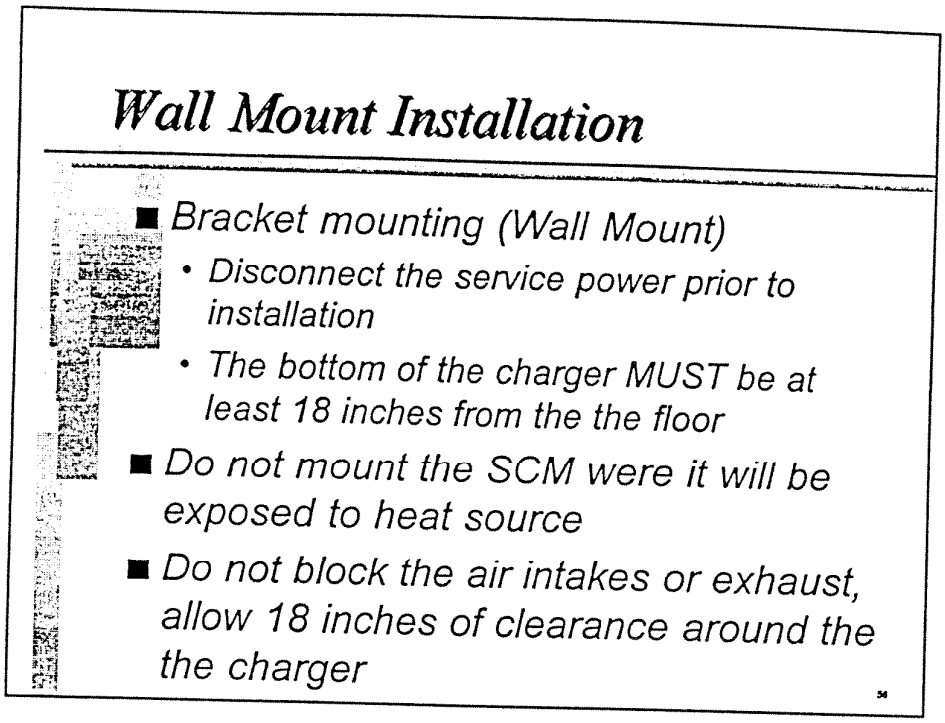
Wall Mount Installation
Bracket mounting (Wall Mount)
Disconnect the service power prior to installation
The bottom of the charger MUST be at least 18 inches from the the floor
Do not mount the SCM were it will be exposed to heat source
Do not block the air intakes or exhaust, allow 18 inches of clearance around the the charger

18 inches from the floor is a safety requirement - the 18 inches from the floor is to provide a buffer between the charger and an any stray flammable vapors

Mounting the charger next to a hot water heater , clothes dryer or any appliance that produces heat may cause premature failure of the charger.

18 inches of clearance around the charger has two purposes, (1) provide for an unrestricted air flow for cooling, (2) provide for access for installation and removal of the charger

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Wall Mount Installation

- *Do not expose the charger to rain or excessive moisture (Wall Mount)*
- *Properly ground the charger during installation*
- *Install the charger on a dedicated 208-240 VAC (single phase) branch circuit rated at 40 amps*

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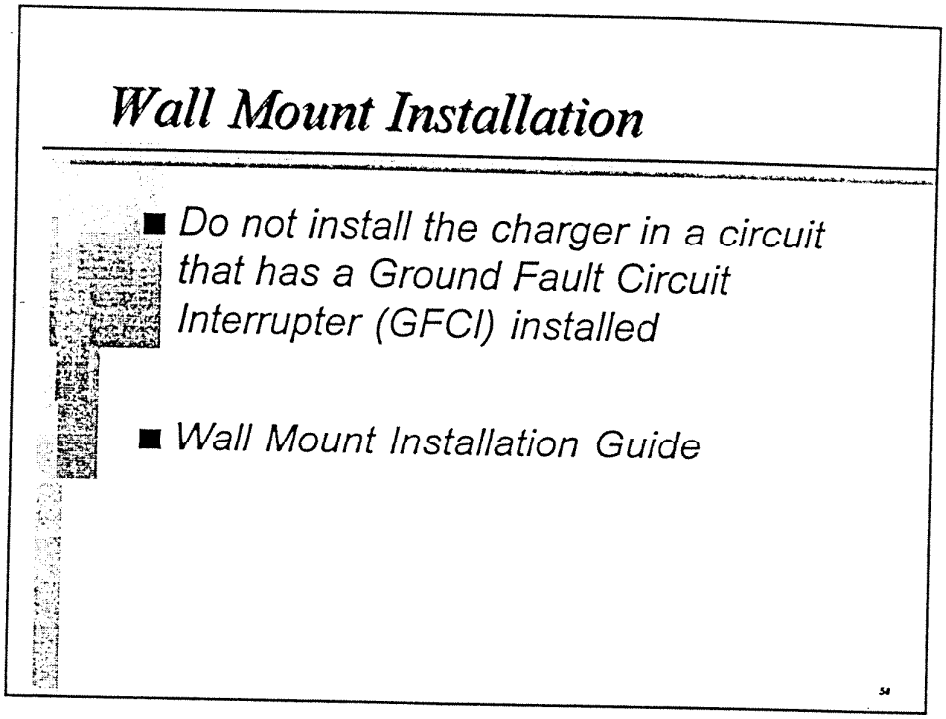
Wall Mount Installation
Do not install the charger in a circuit that has a Ground Fault Circuit Interrupter (GFCI) installed
Wall Mount Installation Guide

The Charger has a GFCI protection circuit built-in. If the charger is install into a service that contains a GFCI a condition called "NUISANCE TRIPPING" may occur. This condition will cause Building's GFCI or the SCM's GFCI to trip.

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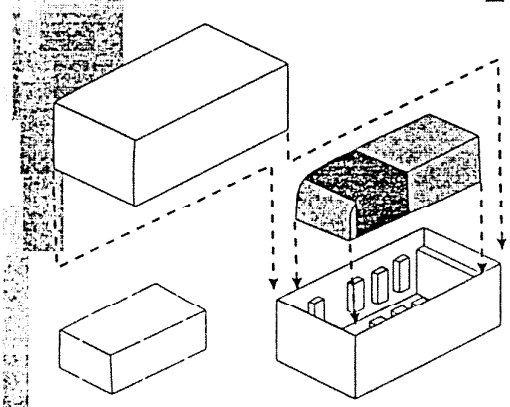
Wall Mount Installation



- *Unpacking the Floor mount charger*
  - *Remove straps*
  - *Remove top cover*
  - *Lift the charger from packing box*
  - *Do not lift using coupler cable or power leads*

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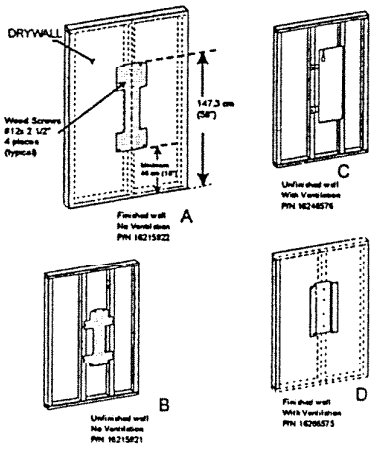
Wall /Floor Mount Installation



Call your local MagneCharge™ Sales and Service Representative for MagneCharge™ Authorized parts.

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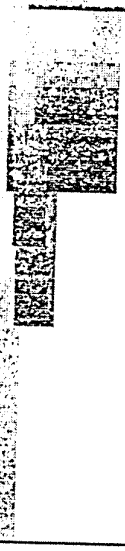
Wall Mount Brackets



SPECIFICATION CONTROL DRAWING
FOR THE MANUFACTURE OF MOUNTING BRACKETS

The following requirements are to be met for a Manufacturer Certification for the fabrication of the Mounting Brackets for the MagneCharge WM200 Wall Mount Inductive Charger. Each Manufacturer of the product must be Certified independently.

PHYSICAL ATTRIBUTES

All the Dimensions and Material call outs of the following drawings shall be verified using one (1) piece sample of each bracket type from the first lot manufactured:

PCS drawing A16215921 - Plate - Mount, Unfinished
PCS drawing A16215922 - Plate - Mount, Finished
PCS drawing 16246575 - Plate - Vent Mount, Finished
PCS drawing 16246576 - Plate - Vent Mount, Unfinished

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Wall Mount Brackets

STATIC LOAD TEST

A static load test shall be performed on each sample. The bracket assembly shall withstand the load test without permanent deformation, breakage or cracking of the mounting supports.

The mounting bracket shall be mounted according to the instructions contained in the **Wall Mount Charger Installation Guide (WM200).**

The bracket assembly shall support a static load of four (4) times the load supported when the charger is mounted. This load, 132 kg (292 lbs) total including the charger, shall be applied through the center of gravity of the charger in the downward direction or applied evenly over the horizontal plane of the charger.

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Wall Mount Brackets

CERTIFICATION

The Distributor shall perform all of the above tests/measurements and provide to PCS a copy of the test results and a document, on the Distributors letter head, Certifying that the brackets have been manufactured to the PCS drawings and a sample has passed all of the above tests/measurements prior to using any of the brackets to mount a MagneCharge charger.

A written procedure will be provided by the Manufacturer of the brackets to PCS through the Distributor defining the Quality Control processes in place at his facility.

PCS upon receipt of the above documentation will review it for completeness and accuracy. If the certification is in order a letter of compliance will be issued and the Distributor may use the certified manufacturer to fabricate brackets for installation of MagneCharge Chargers.

NOTE: Any item used without certification shall be considered by PCS as NON-CONFORMING MATERIAL and Liability for use becomes the sole responsibility of the Distributor

63

Wall /Floor Mount Installation

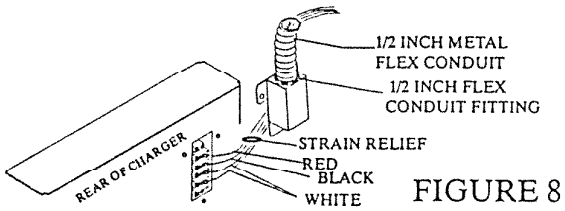
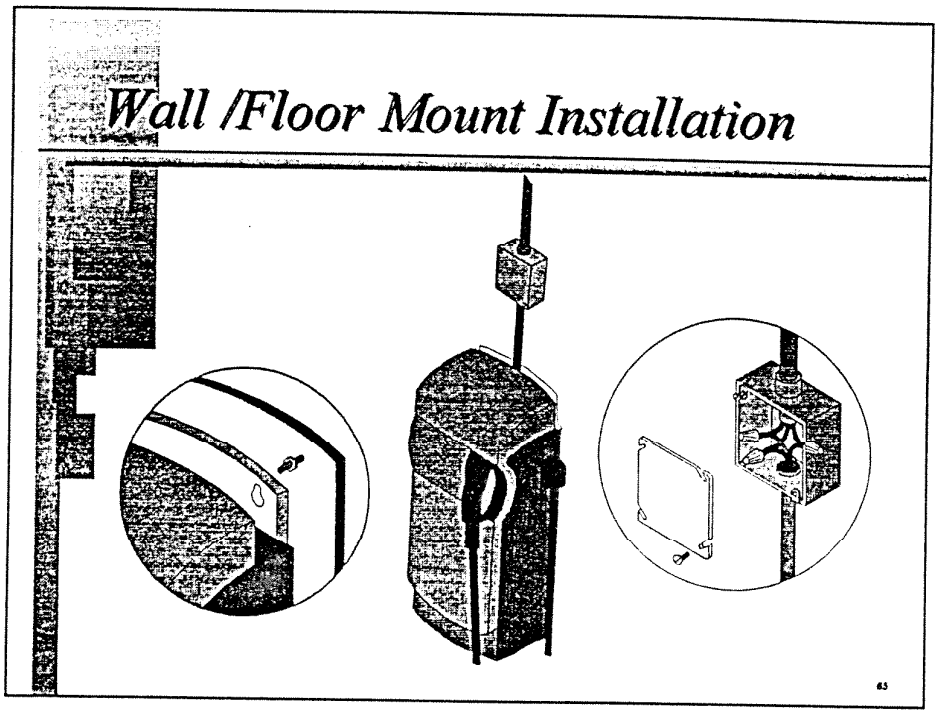
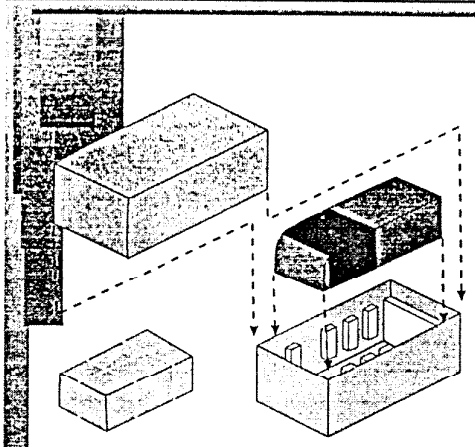


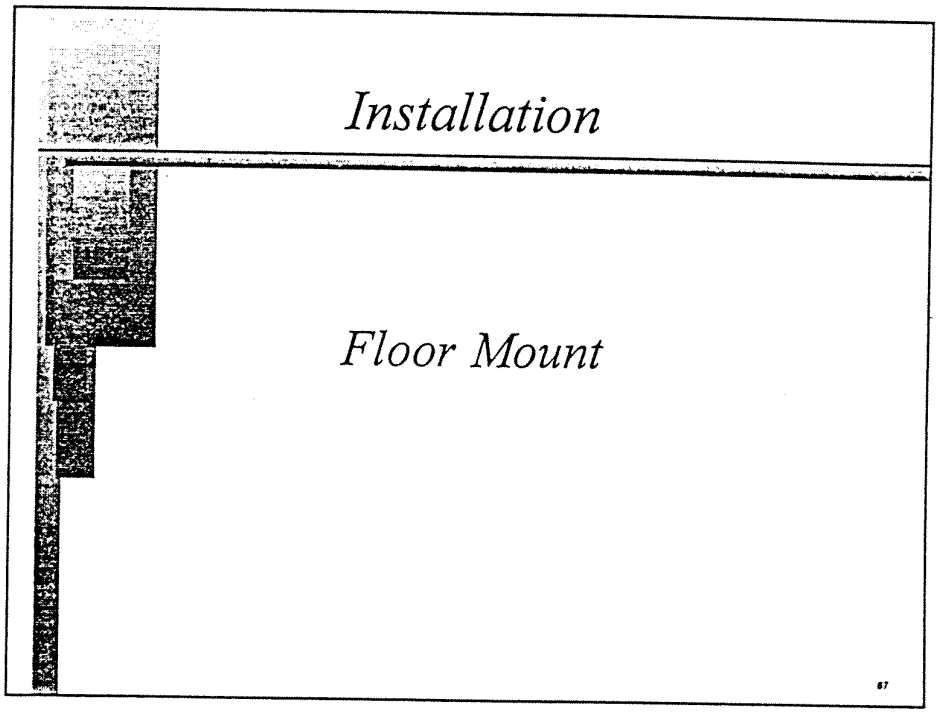
FIGURE 8

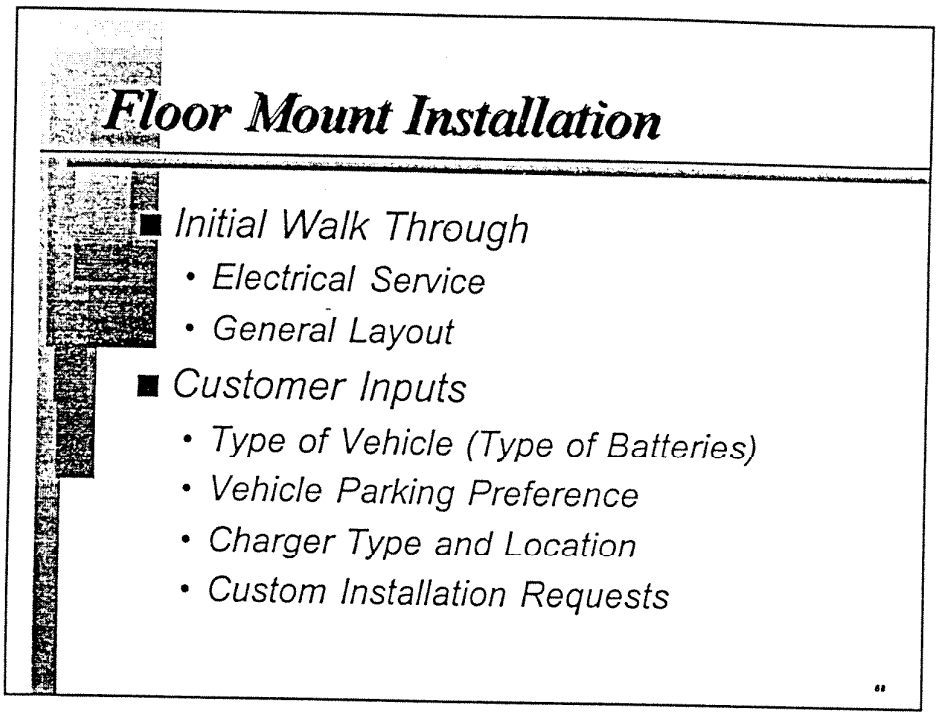

Wall /Floor Mount Installation
65

Wall Mount Installation



- *Packing the Wall mount charger*
  - *Cover top section with plastic*
  - *Lower SCM into packing box*
  - *Slide shipping box top over the lower section*
  - *Band the box together*


Installation
Floor Mount
67



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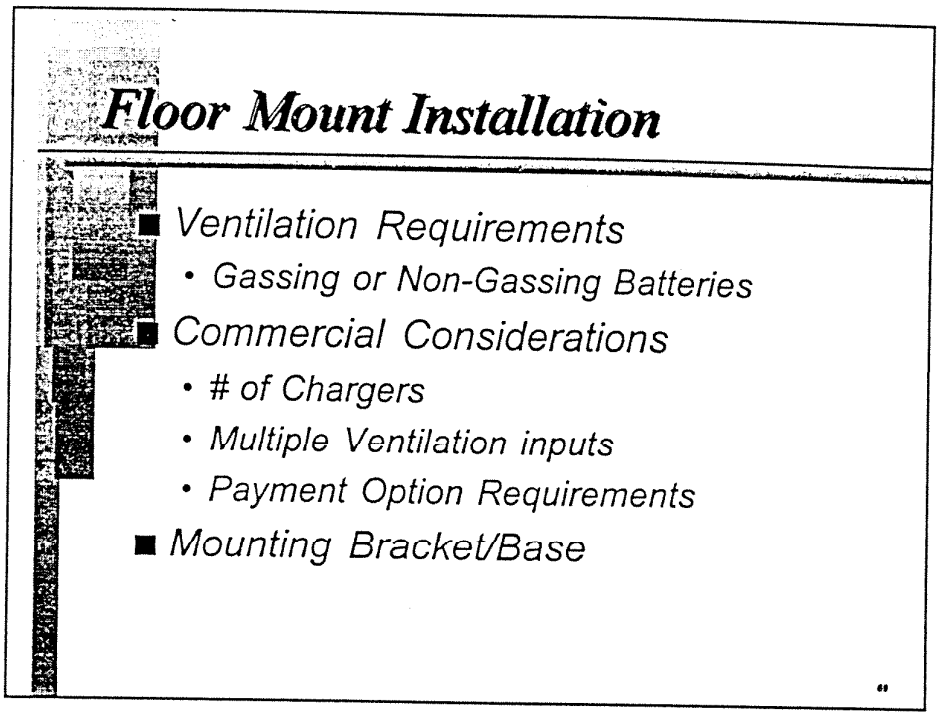

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Vehicle's BPM will establish the communications link with the SCM.

The BPM will tell the SCM that the vehicle's battery pack will require ventilation.

The SCM will turn on the Ventilation system and verifies the Vent Confirm Signal from the Ventilation system. If the Vent Confirm is "true" then the charger will apply power to the charge port, if the vent confirm signal is "false" then the charger will not apply power to the charge port.

Commercial Installations have their own requirements, number of chargers installed, location and payment systems. If the chargers are going to be installed indoors the issue of ventilation systems would have to be addressed (indoor / outdoor).

The issues of mounting bases for the chargers will be dependent upon the ventilation requirements and the location the charger s are to be installed.

Payment option systems may require a neutral wire to be installed to provide the 125 V to operate.

Floor Mount Installation

- *Properly ground the charger during installation*
- *Install the charger on a dedicated 208-240 VAC (single phase) branch circuit rated at 40 amps*

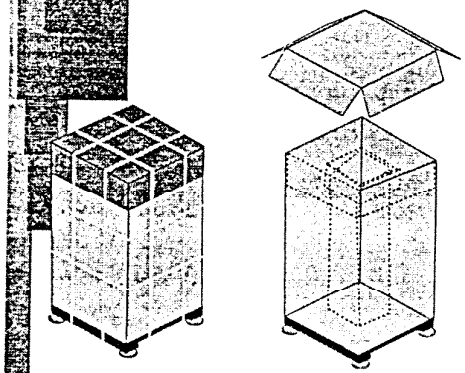
70

Floor Mount Installation

- Do not install the charger in a circuit that has a Ground Fault Circuit Interrupter (GFCI) installed
- Floor Mount Installation Guide

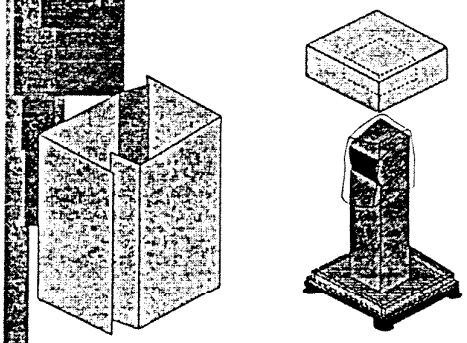
71

Floor Mount Installation



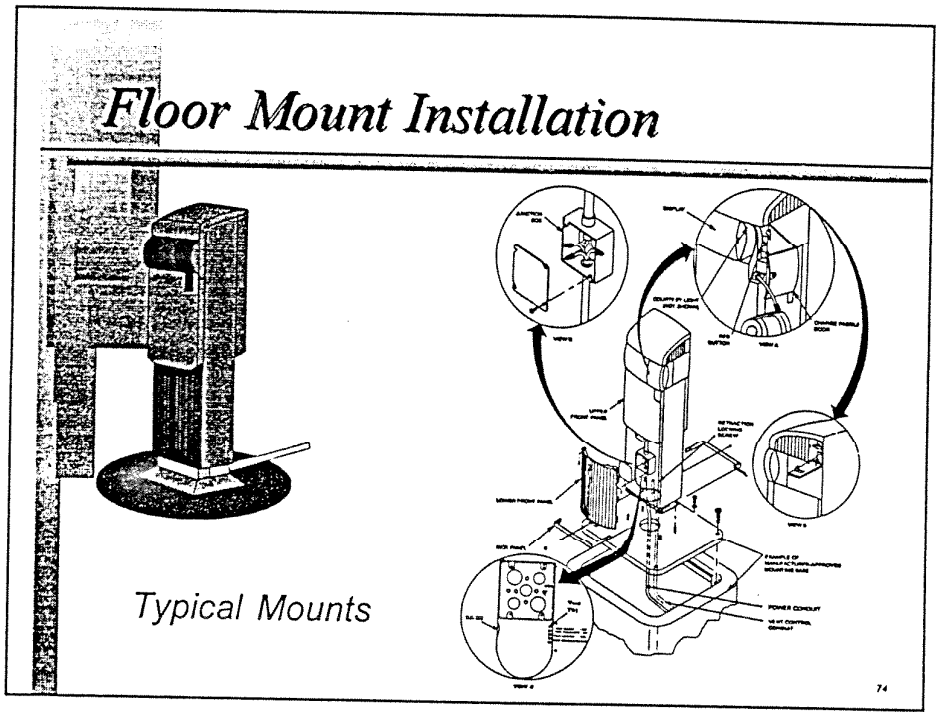
- *Unpacking the Floor mount charger*
  - *Remove straps*
  - *Remove top cover*

Floor Mount Installation



- *Part 2 Unpacking the Floor Mount Charger*
  - *Remove sides*
  - *Remove top packing cap*

73



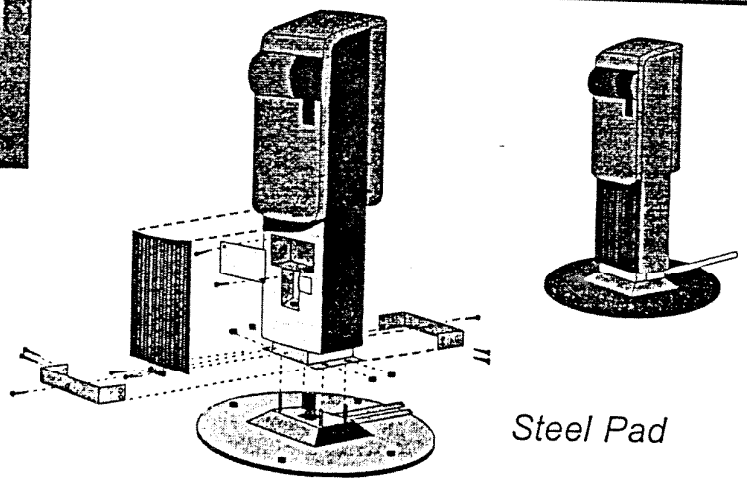
Point out

- •Shipping screw that needs to be removed after shipping - this screw locks the retraction system
- •Location of the RS-232 external interface, for Charge Buddy, power management and software updating
- •location of the Vent control terminal block
- •Talk about the different types of stands the FM200 can be mounted on. - Steel pedestal - Elevated plate - Concrete pad

The Concrete pad has been used by the prEView with very good results

Mounting plates or pads are not provided by PCS.

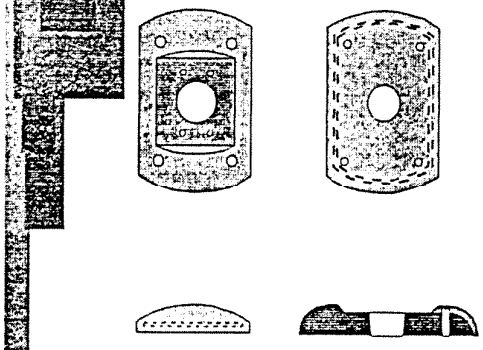
Floor Mount Installation



Steel Pad

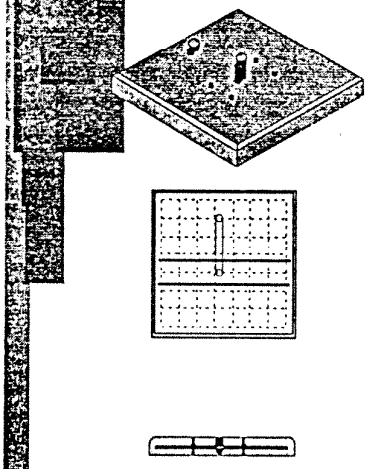
75

Floor Mount Installation



- *Mounting*
  - *Concrete*

Floor Mount Installation



- *Concrete*

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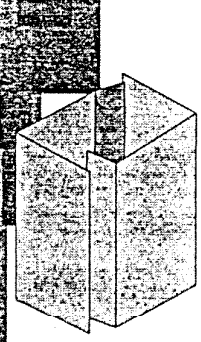
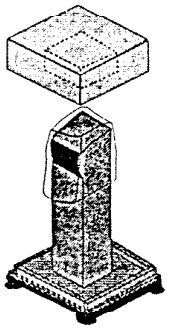
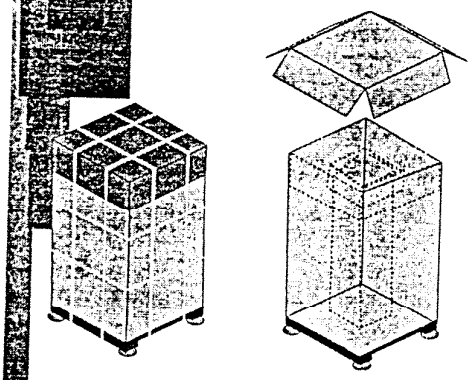
Floor Mount Installation



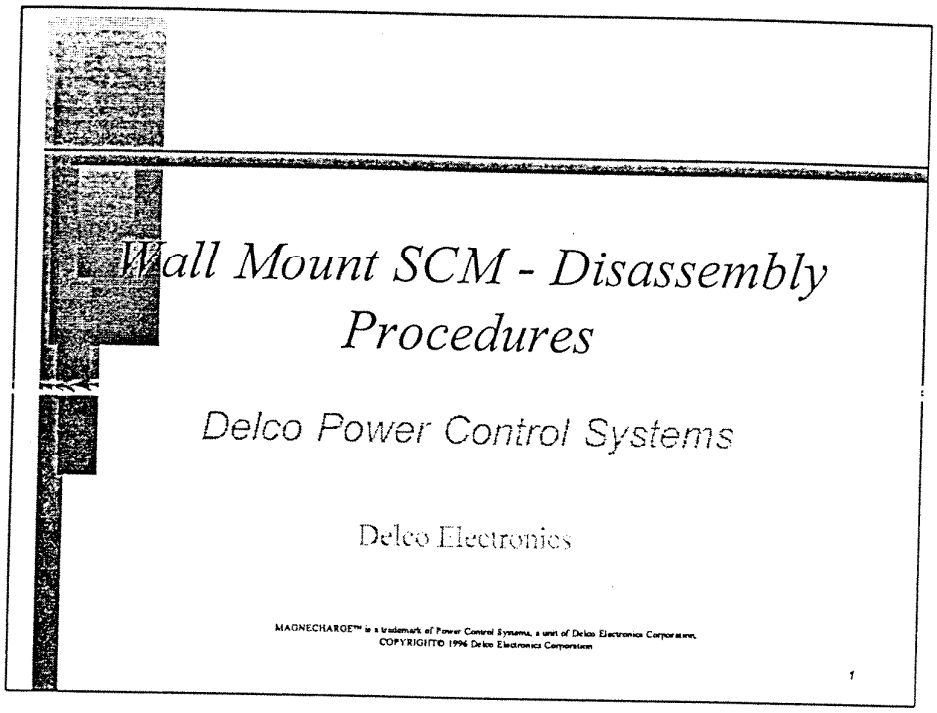


- *Place Floor mount onto the shipping platform*
- *Cover top of Charger with plastic cover*
- *Place foam top cap over the charger*
- *Arrange side panels to form box*

Floor Mount Installation



- *Place top piece over the top of the box*
- *Band the box together using standard shipping strapping material*


Wall Mount SCM - Disassembly Procedures
Delco Power Control Systems
Delco Electronics
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Good _____, my name is_____.

(State your background and experience)

This course is titled Wall mount SCM - Disassembly Procedures.

Introduction

- This course is designed to familiarize the technician with the various assemblies on the Wall mount SCM and with the procedures associated with removing these assemblies.

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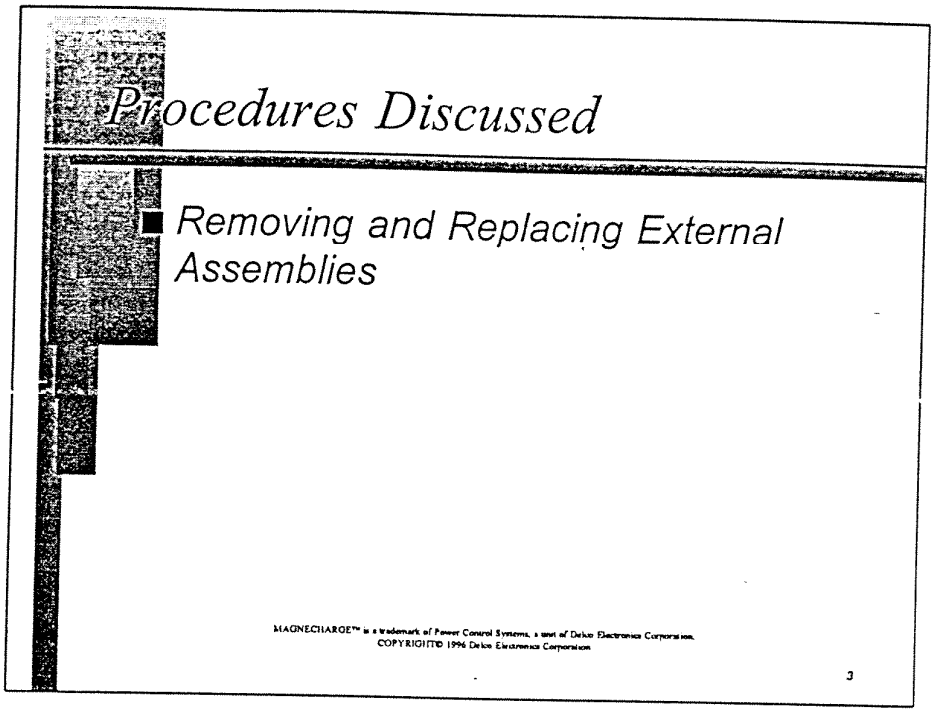
Procedures Discussed
Removing and Replacing External Assemblies
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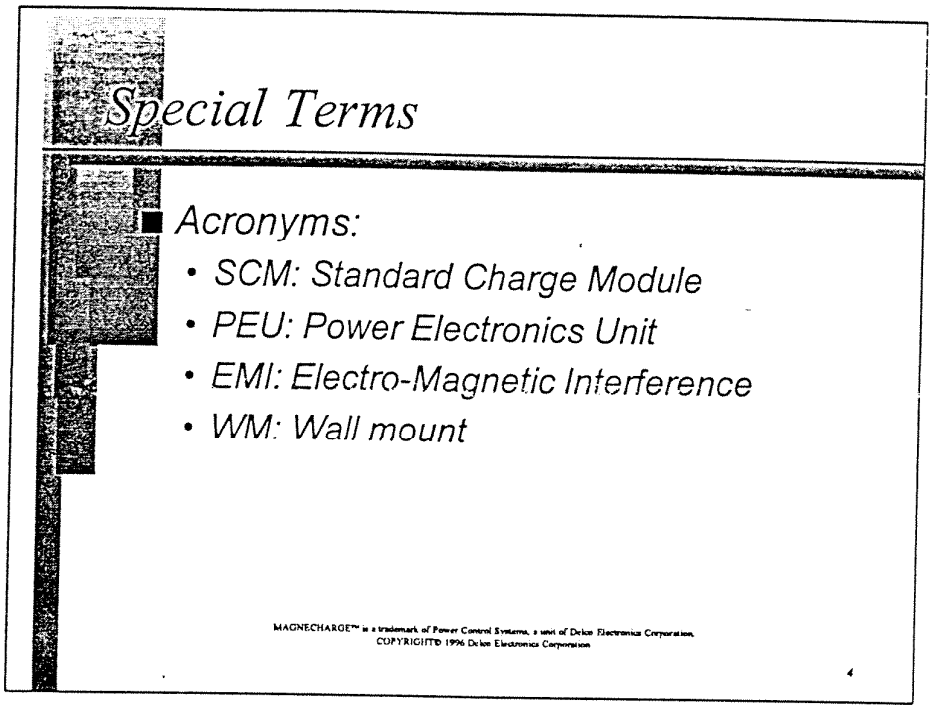
Procedures Discussed-

-"Removing and Replacing External Assemblies"... this involves primarily plastic pieces but also includes the electrical wiring assemblies used to connect to outside service.


Special Terms
Acronyms:
• SCM: Standard Charge Module
• PEU: Power Electronics Unit
• EMI: Electro-Magnetic Interference
• WM: Wall mount
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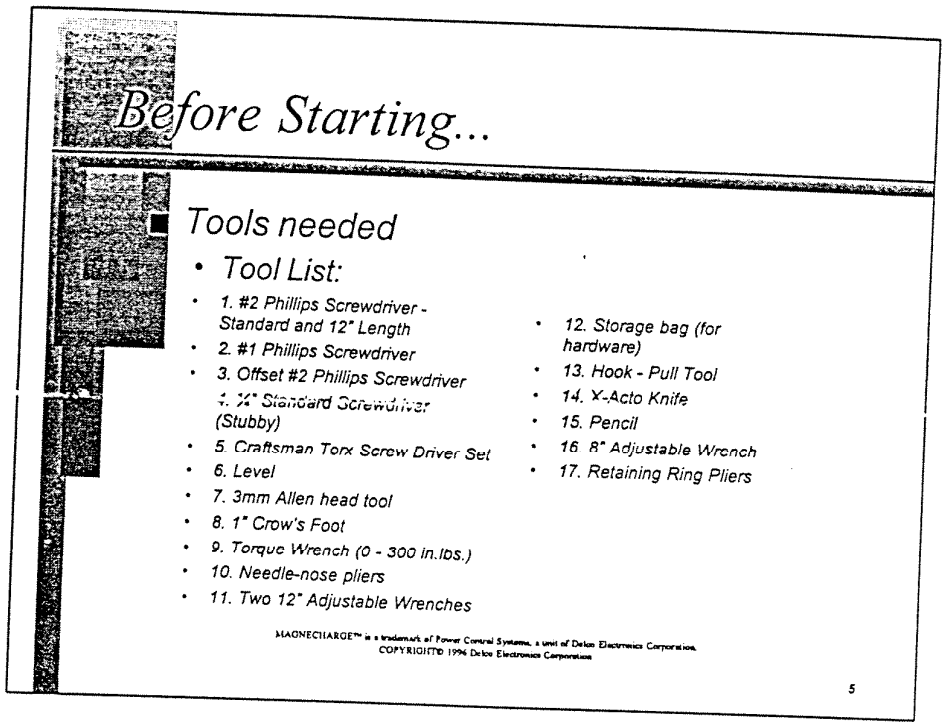
These are some of the acronyms that you'll hear as we go through the course.

If any more are mentioned that aren't clear, just ask about them and we should be able to explain them to you.


Before Starting...
Tools needed
• Tool List:
• 1. #2 Phillips Screwdriver - Standard and 12" Length
• 2. #1 Phillips Screwdriver
• 3. Offset #2 Phillips Screwdriver
• 4. ¼" Standard Screwdriver (Stubby)
• 5. Craftsman Torx Screw Driver Set
• 6. Level
• 7. 3mm Allen head tool
• 8. 1" Crow's Foot
• 9. Torque Wrench (0 - 300 in.lbs.)
• 10. Needle-nose pliers
• 11. Two 12" Adjustable Wrenches
• 12. Storage bag (for hardware)
• 13. Hook - Pull Tool
• 14. X-Acto Knife
• 15. Pencil
• 16. 8" Adjustable Wrench
• 17. Retaining Ring Pliers
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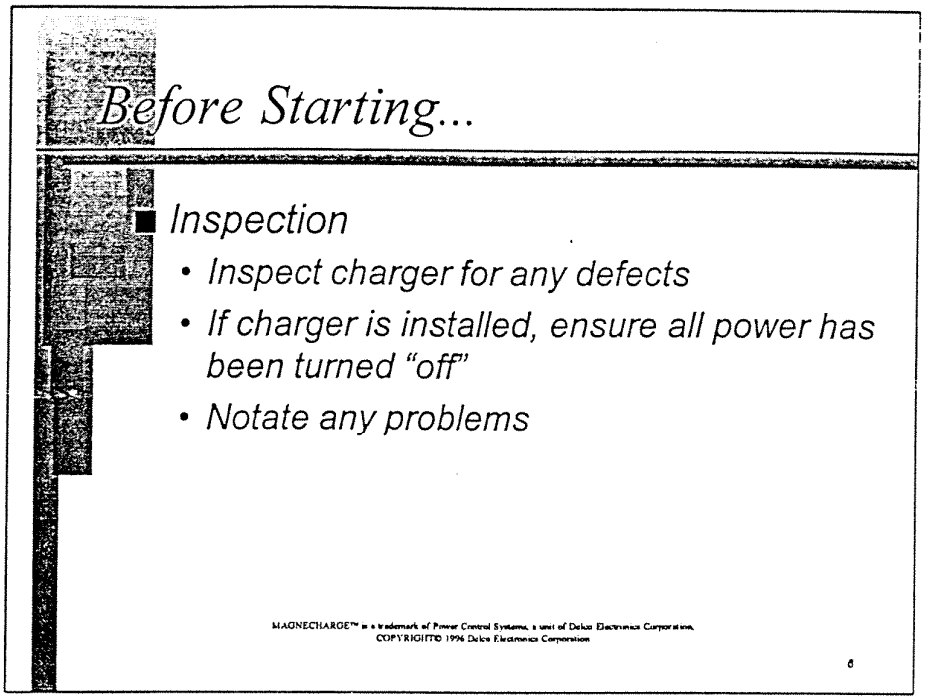
These are the required tools for removing all the assemblies we are going to cover. No special tools are needed, all are common tools found in most toolboxes.


Before Starting...
Inspection
• Inspect charger for any defects
• If charger is installed, ensure all power has been turned "off"
• Notate any problems
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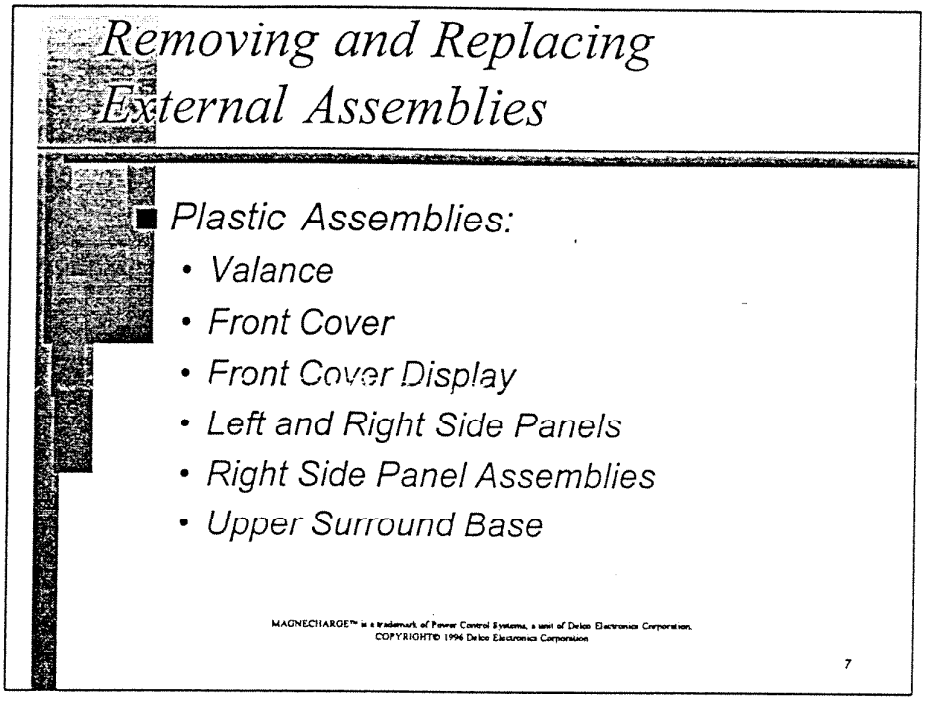
Inspection:

- Inspect charger for any defects...

  Do a through investigation of the unit to ensure there are no cracked, scratched or otherwise damaged pieces.

- Ensure power has been turned "off"

- Notate any problems...


Removing and Replacing External Assemblies
Plastic Assemblies:
• Valance
• Front Cover
• Front Cover Display
• Left and Right Side Panels
• Right Side Panel Assemblies
• Upper Surround Base
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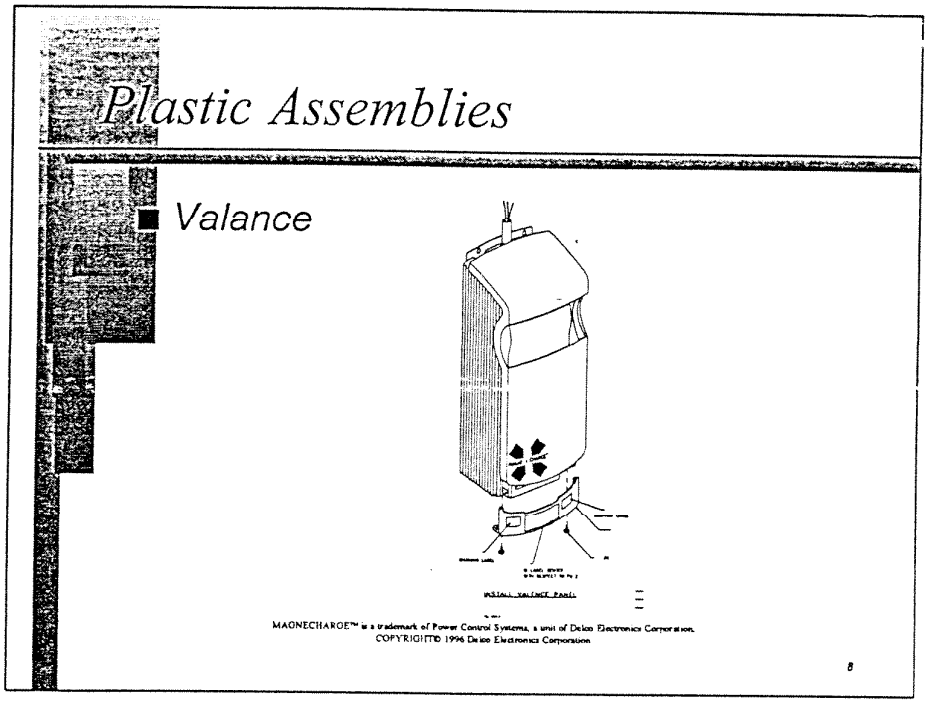
These Subassemblies will be covered in the following sections.


Plastic Assemblies
Valance
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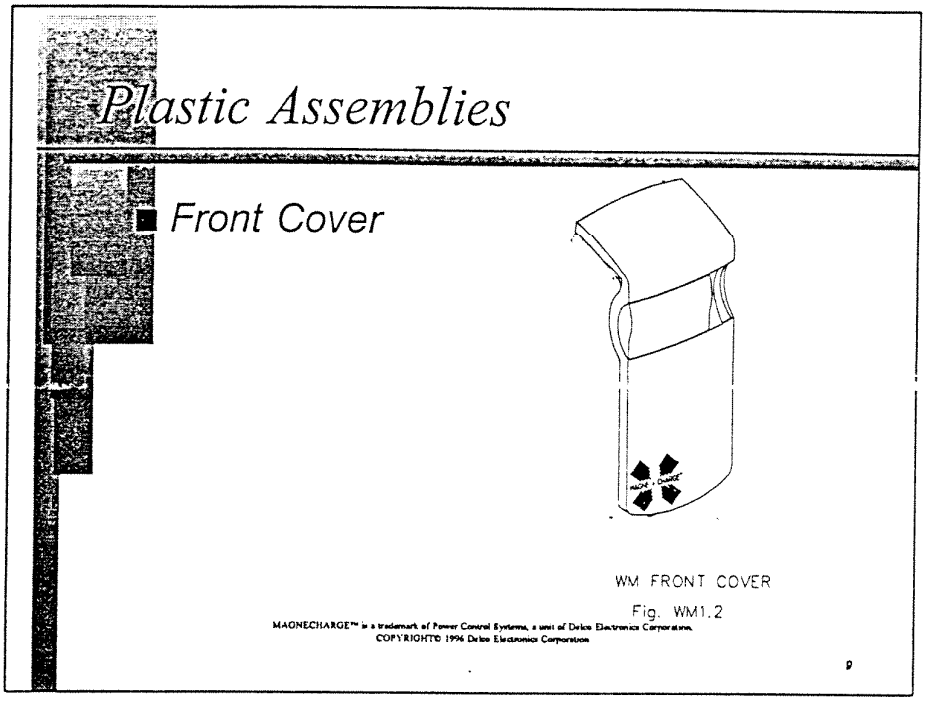
To remove the Valance :

-Using a #2 screwdriver, locate and remove two screws and washers from below the Valance,

-Pull down on Valance to remove,

To replace the Valance:

- Position Valance under Front cover and ensure top tabs slide underneath cover,
- Replace two screws and washers,
- Apply new labels, if necessary.


Plastic Assemblies
Front Cover
WM FRONT COVER
Fig. WM1.2
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To remove the Front Cover :

-Using an # 2 Phillips screwdriver, locate and remove two screws and washers from the front bottom of the Front Cover,

-Next locate and remove two screws and washers from the top back of the Front Cover,

Note: If the charger is still mounted to the wall an offset #2 Phillips screwdriver will be needed to remove the top screws.

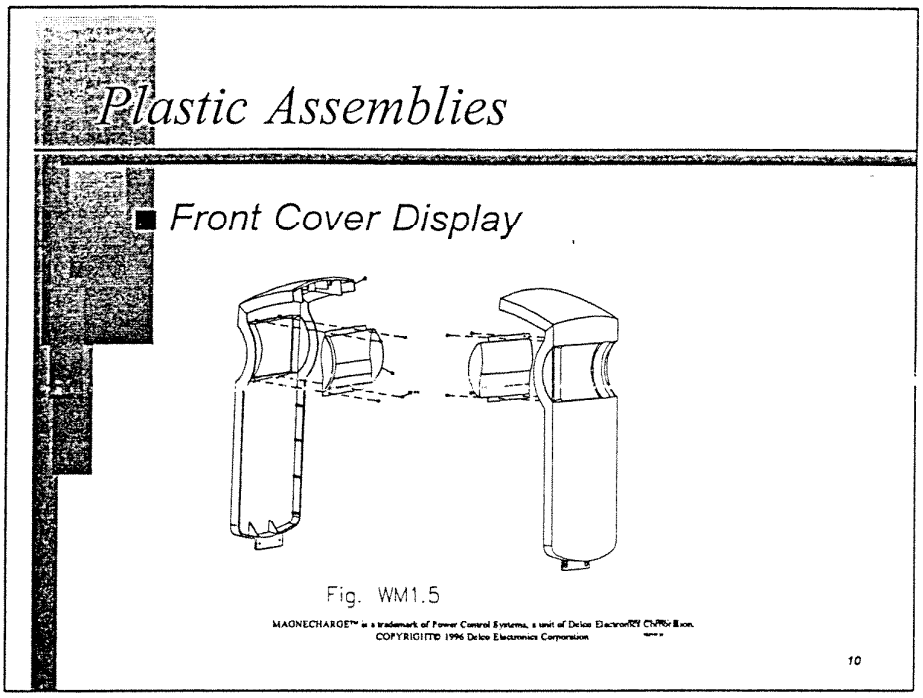
-Pull up on Front Cover to remove.

To replace the Front Cover:

- Place Front Cover assembly onto charger so that all four screw holes are aligned,

- Replace the top screws and washers, do not tighten fully,

- Replace the bottom screws and washers, tighten all four screws equally.

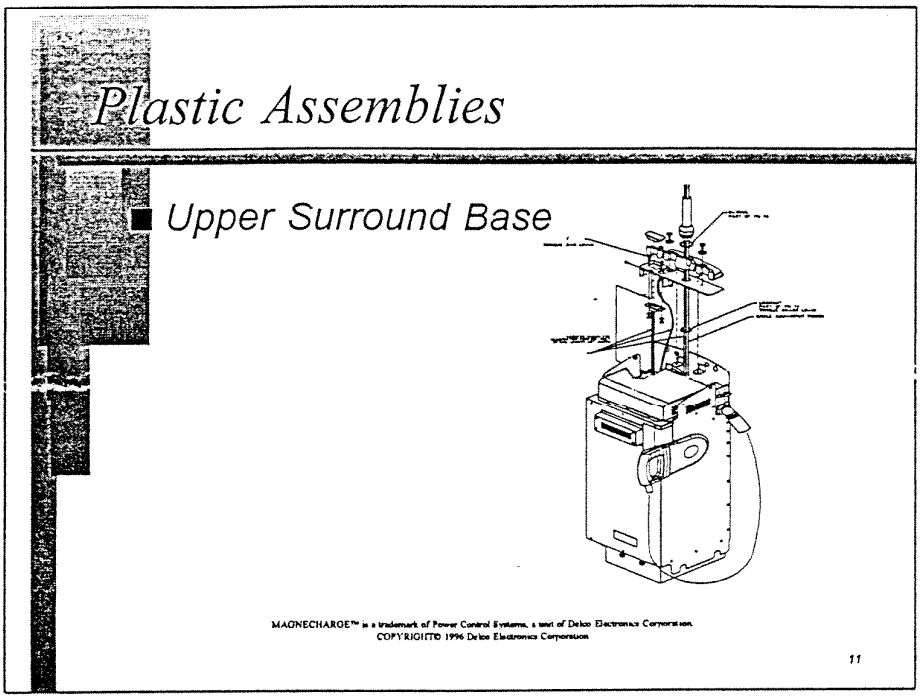


To remove the Front Cover Display:

- After the Front Cover has been removed, use a # 20 Torx bit and 1/4" driver to remove four screws located on the back of the cover.
- Push display through cover to remove.

To replace Front Cover Display:

- Place new Display on to the Front Cover and replace the four Torx screws.


Plastic Assemblies
Upper Surround Base
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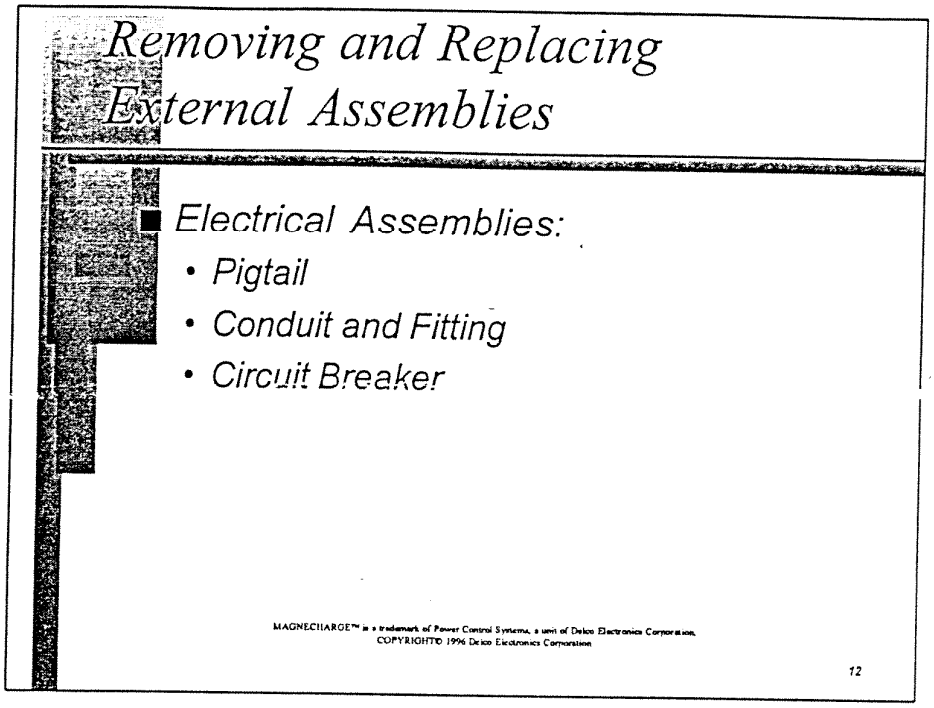
To remove the Upper Surround - Base:

-Using a # 2 Phillips screwdriver, locate and remove two screws from the top of the Upper Surround,

- Lift up on base and pull over conduit to remove.

To replace the Upper Surround Base:

- Place base over conduit and place on chassis,
- Replace screws and washers,
- Tighten with a # 2 screwdriver.


Removing and Replacing External Assemblies
Electrical Assemblies:
• Pigtail
• Conduit and Fitting
• Circuit Breaker
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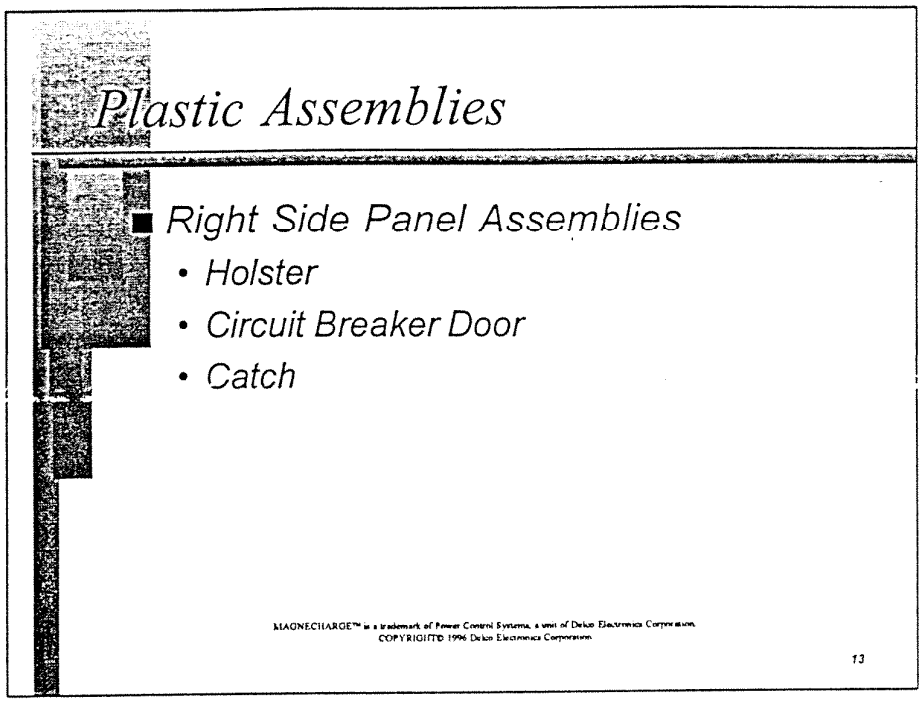
These subassemblies will be covered in the following sections.


Plastic Assemblies
Right Side Panel Assemblies
• Holster
• Circuit Breaker Door
• Catch
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To remove the coupler assembly holster:

-Using a #20 Torx bit and 1/4" driver, remove three screws from the back of the right side panel,

-Lift up on holster to remove,

- Re-attach the holster by placing the new piece on the right side panel and replacing the three Torx screws.

To remove the circuit breaker door:

- From the back of the panel, push in side tabs on door assembly,

- From the front of the panel, push door through panel and remove,

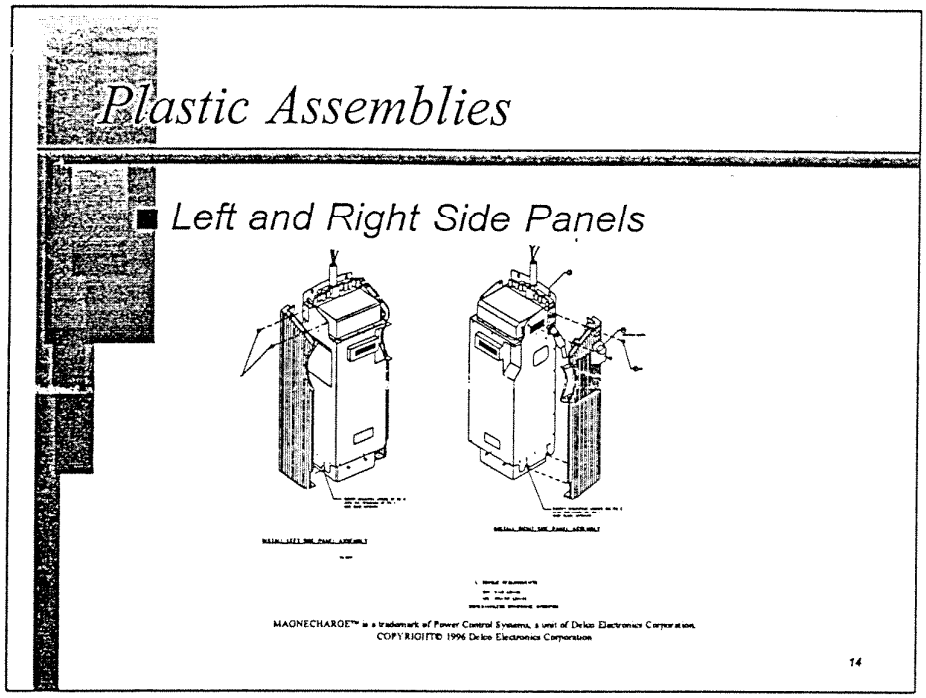
- Push new door through opening in panel (from the back) to replace.

To replace door catch:

- From the back of the panel, locate catch and press down on the top and bottom tabs,

-Push catch through the panel to remove,

- Push new catch through the panel (from the front)to replace.


Plastic Assemblies
Left and Right Side Panels
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To remove the side panels:

- Using a # 2 Phillips screwdriver, locate and remove two screws and washers from the top of each panel,

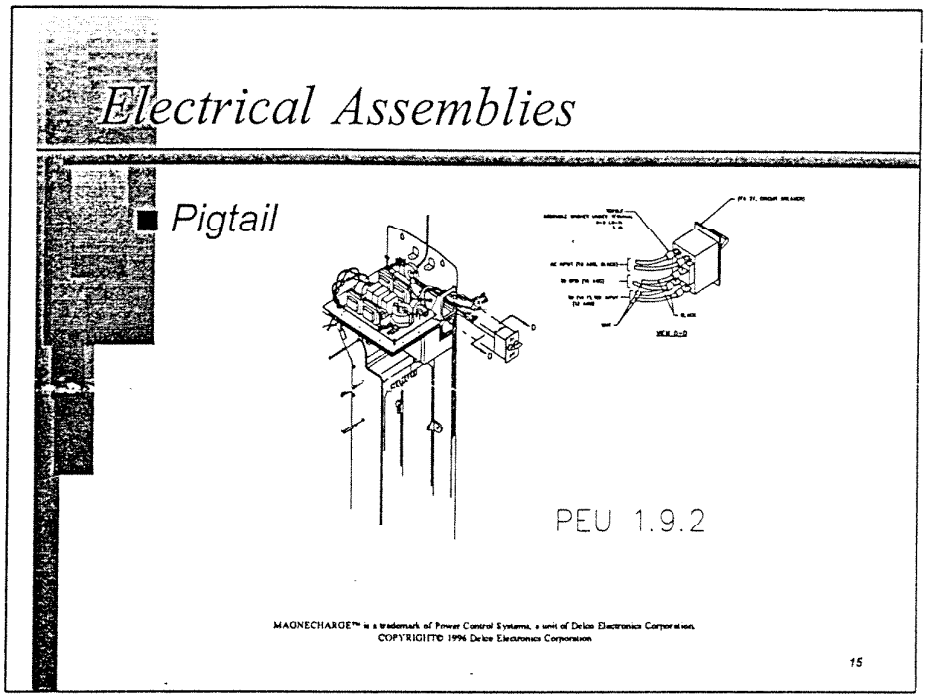
- Push down on the panel, then pull the bottom of the panel away from the chassis to remove.

To replace the side panels:

- Place panels on charger so that the two bottom tabs hook underneath the main chassis,

- Position the panel to line up the screw holes with the main chassis Pem nuts,

- Replace screws and tighten.



To remove the Pigtail:

-After removing plastics, locate and remove three screws with a # 1 Phillips screwdriver from the Chassis Inner Top,

- Pull top up and away from chassis,

- Locate circuit breaker and remove two screws from the top terminals,

- Remove Green groundwire,

- Pull pigtail assembly away from breaker then pull wires through conduit to remove.

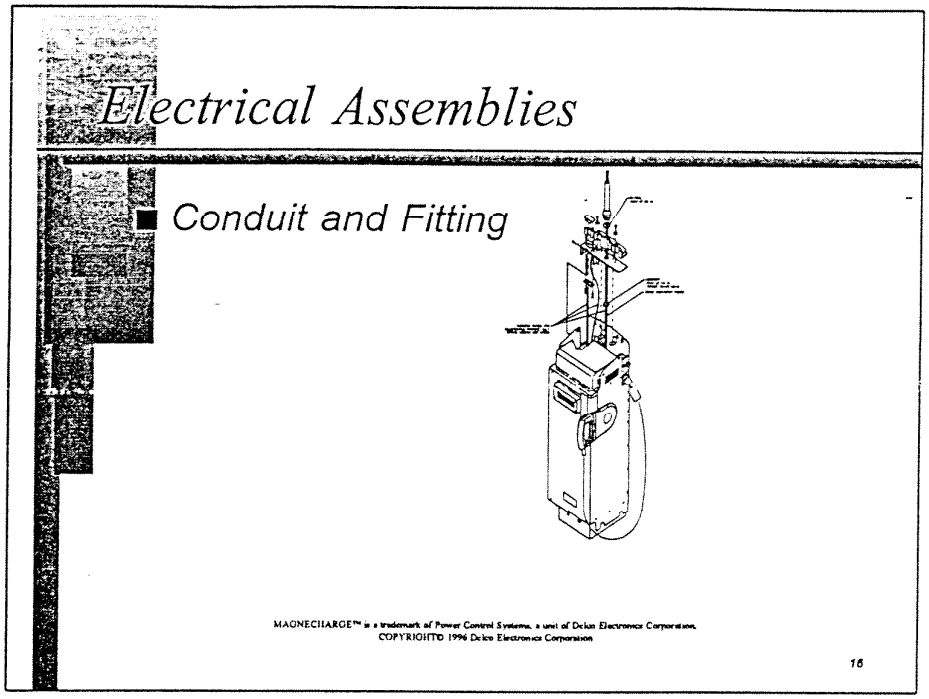
Note: Do not disturb toroid (choke) and wires wrapped around the assembly.

To replace Pigtail:

- Re-connect the two Pigtail wires to the two top terminals of the circuit breaker, r-connect Green groundwire,

- Route wires through conduit and place choke in the slot between the EMI filter and chassis,

- Replace Chassis Inner Top.


Electrical Assemblies
Conduit and Fitting
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To remove Conduit:

- After removing plastics, locate conduit fitting mounted in the middle of the Inner Chassis Top,

- Using two sets of adjustable wrenches, hold the base of the fitting steady and loosen top plastic piece,

- Continue to loosen piece by hand and remove,

- Pull conduit up and away from fitting and pull wires through to remove.

To replace Conduit:

- Remove top piece of pipe fitting,

- Route wires through conduit and place end of conduit into fitting,

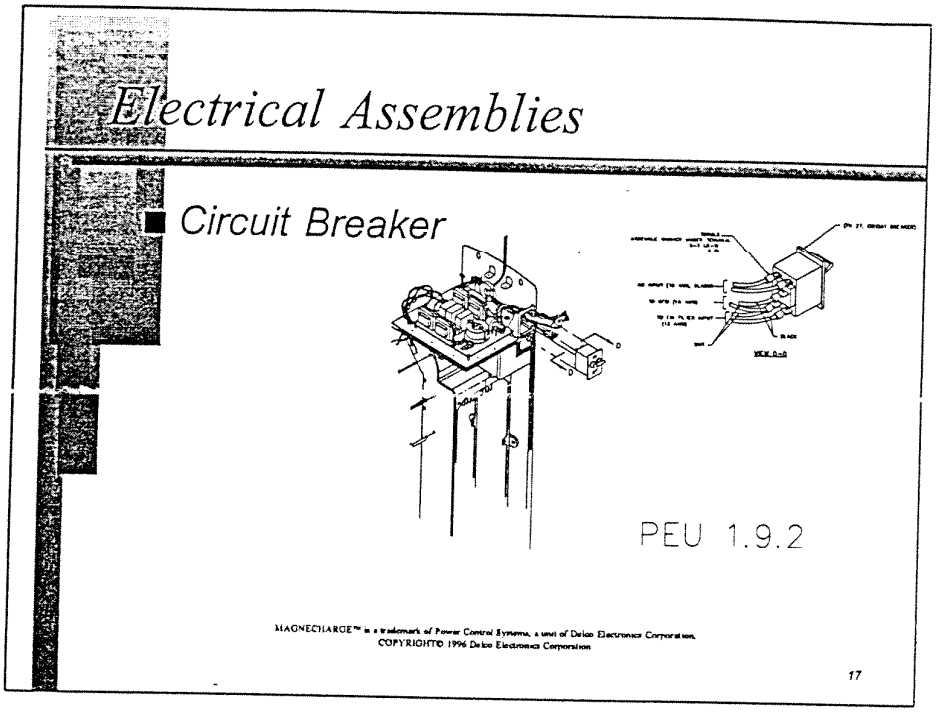
- Replace top piece of fitting back over conduit and hand tighten with adjustable wrenches.

To replace the fitting:

- Locate the lock nut underneath the Chassis Inner Top,

- Using two adjustable wrenches, remove the locknut and pull fitting away from top and route wires through fitting to remove.

- Route wires through chassis top and new fitting and tighten locknut back onto new fitting.


Electrical Assemblies
Circuit Breaker
PEU 1.9.2
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To remove Circuit breaker:

-After removing plastics, locate and remove three screws with a # 1 Phillips screwdriver from the Chassis Inner Top,

- Pull top up and away from chassis,

- Locate Circuit Breaker and press down two tabs located on top of the part,

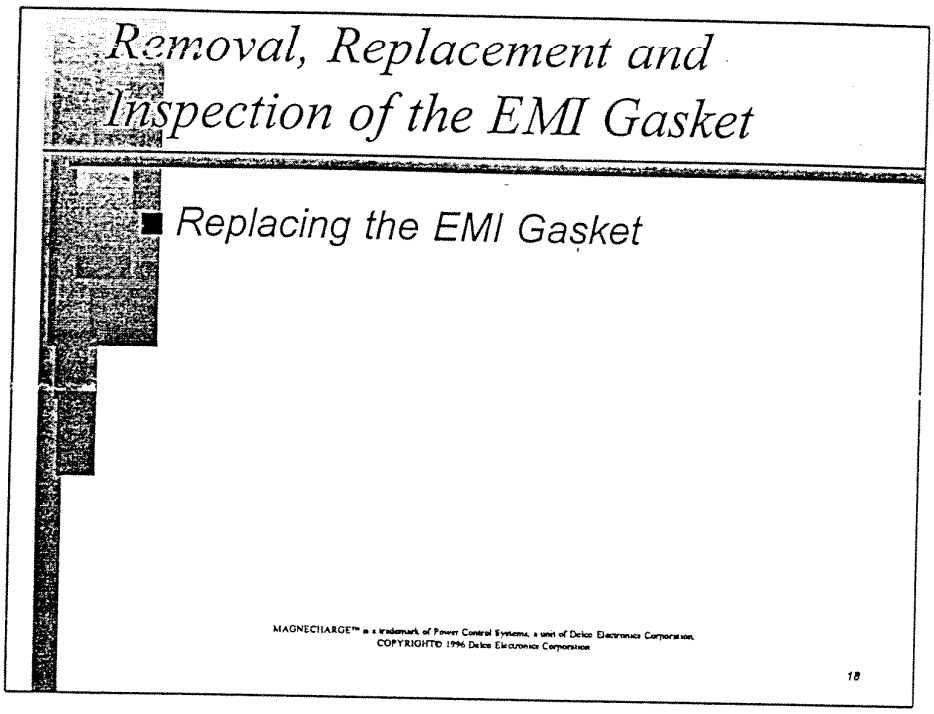
- Pull Circuit Breaker away from main chassis and remove five screws (two from the top terminals and three from the bottom terminals)

Note: Before removing wires, notate the placement of each wire on the breaker. This will ensure correct re- wiring of circuit breaker.

Replacing the Circuit Breaker:

- Re-wire breaker according to your notes or drawing above,

- Push the breaker through opening in the main chassis and ensure that the top and bottom tabs snap into place.


Removal, Replacement and Inspection of the EMI Gasket
Replacing the EMI Gasket
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To replace gasket material:

- Examine the EMI gasket and determine the condition of each section on the chassis,

- If there is a damaged section, use an X-acto knife and cut out the section to be replaced, remove any excess adhesive with alcohol,

- Measure a length of gasket material equal to the removed section, peel off paper backing and apply on chassis, smooth area out with fingers.

Removing and Replacing Internal Assemblies

Replacing the Fan

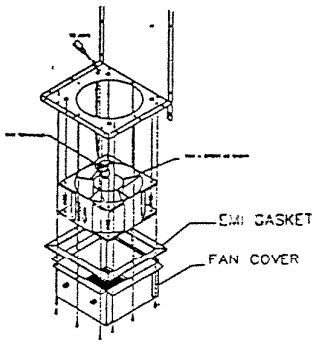

Fig. PEU 1.9.

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To replace the Fan:

- Locate and remove twelve screws from fan cover,
- Locate and remove four screws holding the fan in place,
- Remove fan connector assembly from fan terminals,
- Replace fan and re connect fan connector assembly to terminals,
- Replace four fan screws,
- Replace cover by replacing twelve chassis screws.

Summary

- Completion of this course allows the technician to disassemble a Wall mount SCM and replace certain sub-assemblies.
- The knowledge gained will aid in the timely replacement and repair of customer units.
- Want to learn more about the SCM?

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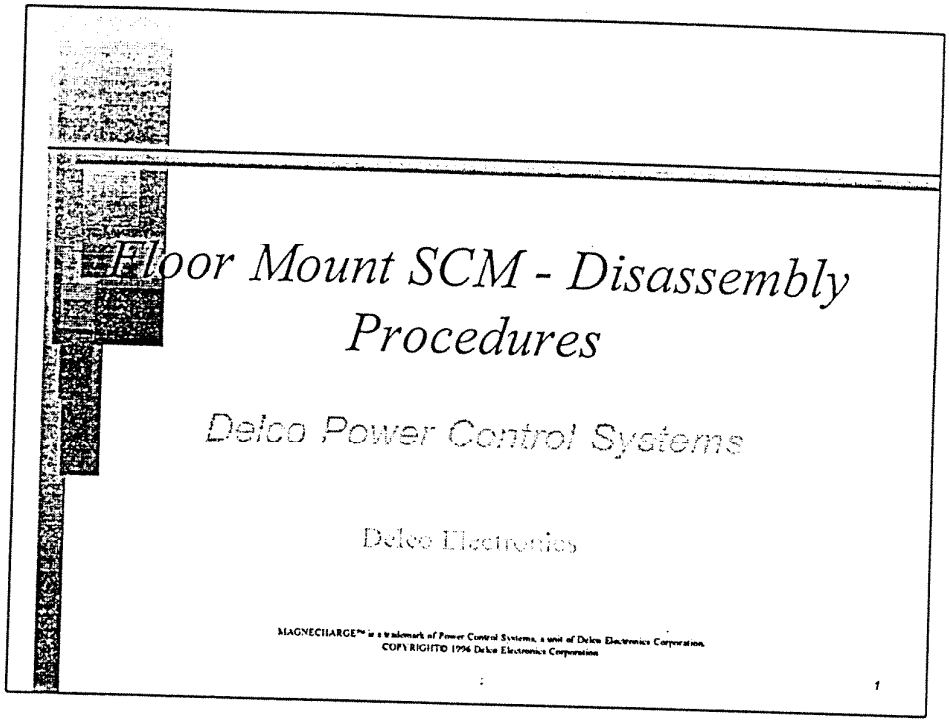
Floor Mount SCM - Disassembly Procedures
Delco Power Control Systems
Delco Electronics
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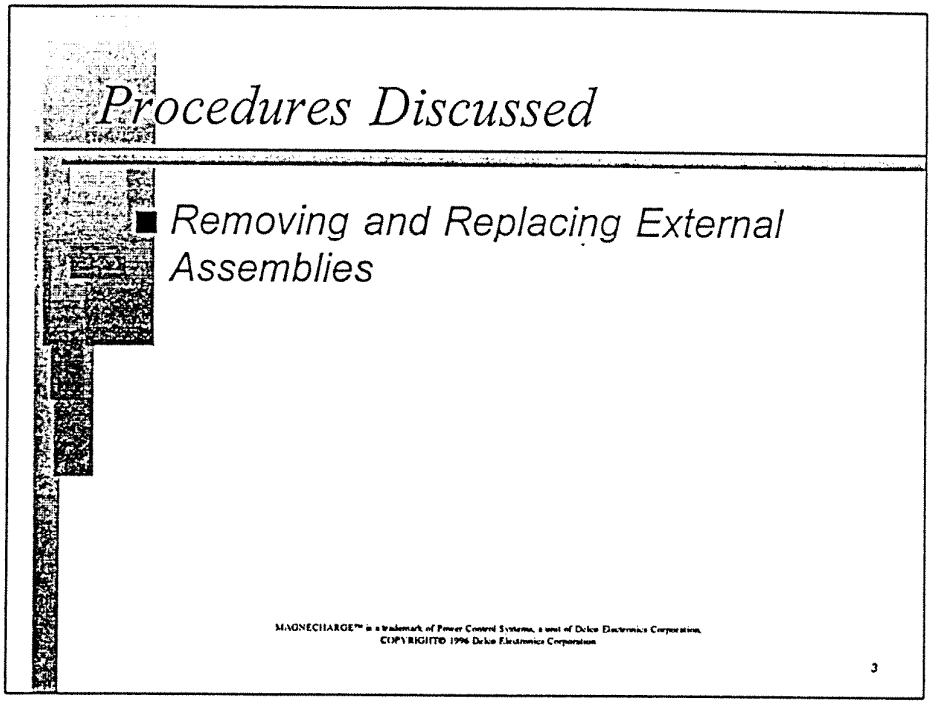
Good _____, my name is_____.

(State your background and experience)

This course is titled Floormount SCM - Disassembly Procedures.


Procedures Discussed
Removing and Replacing External Assemblies
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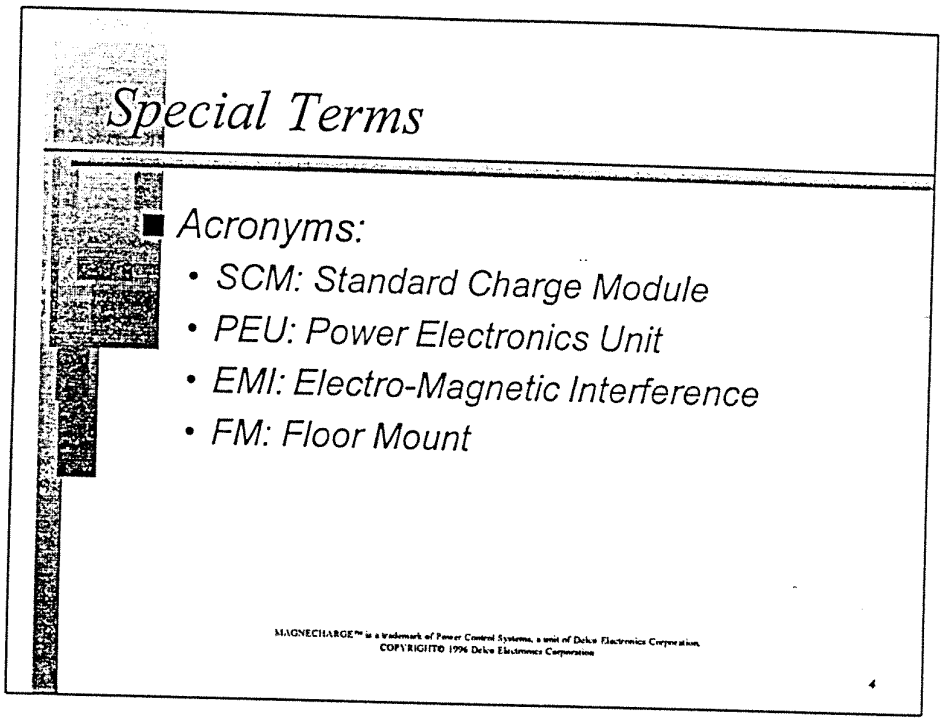
3

Procedures Discussed-

-"Removing and Replacing External Assemblies"... this involves primarily plastic pieces but also includes the electrical wiring assemblies used to connect to outside service.


Special Terms
Acronyms:
• SCM: Standard Charge Module
• PEU: Power Electronics Unit
• EMI: Electro-Magnetic Interference
• FM: Floor Mount
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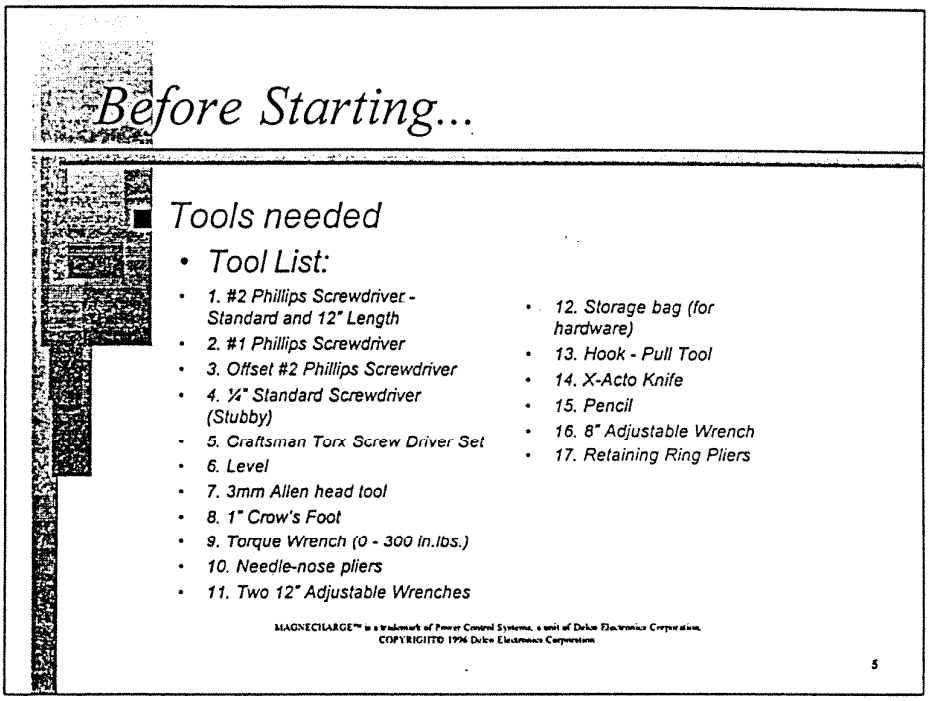
These are some of the acronyms that you'll hear as we go through the course.

If any more are mentioned that aren't clear, just ask about them and we should be able to explain them to you.


Before Starting...
Tools needed
Tool List:
1. #2 Phillips Screwdriver - Standard and 12" Length
2. #1 Phillips Screwdriver
3. Offset #2 Phillips Screwdriver
4. ¼" Standard Screwdriver (Stubby)
5. Craftsman Torx Screw Driver Set
6. Level
7. 3mm Allen head tool
8. 1" Crow's Foot
9. Torque Wrench (0 - 300 in.lbs.)
10. Needle-nose pliers
11. Two 12" Adjustable Wrenches
12. Storage bag (for hardware)
13. Hook - Pull Tool
14. X-Acto Knife
15. Pencil
16. 8" Adjustable Wrench
17. Retaining Ring Pliers
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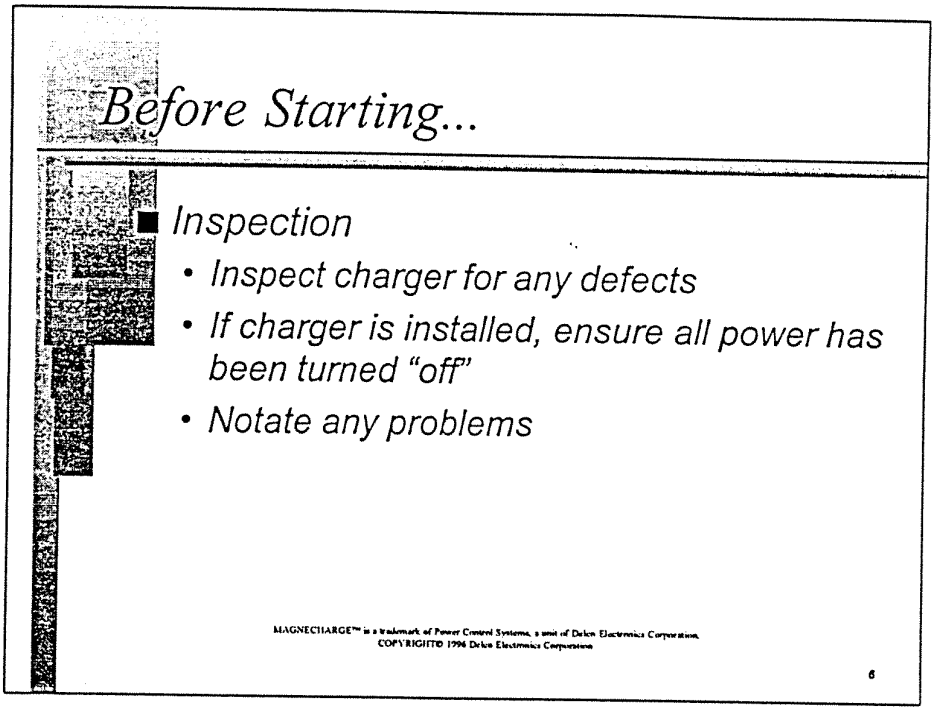
These are the required tools for removing all the assemblies we are going to cover. No special tools are needed, all are common tools found in most toolboxes.


Before Starting...
Inspection
• Inspect charger for any defects
• If charger is installed, ensure all power has been turned "off"
• Notate any problems
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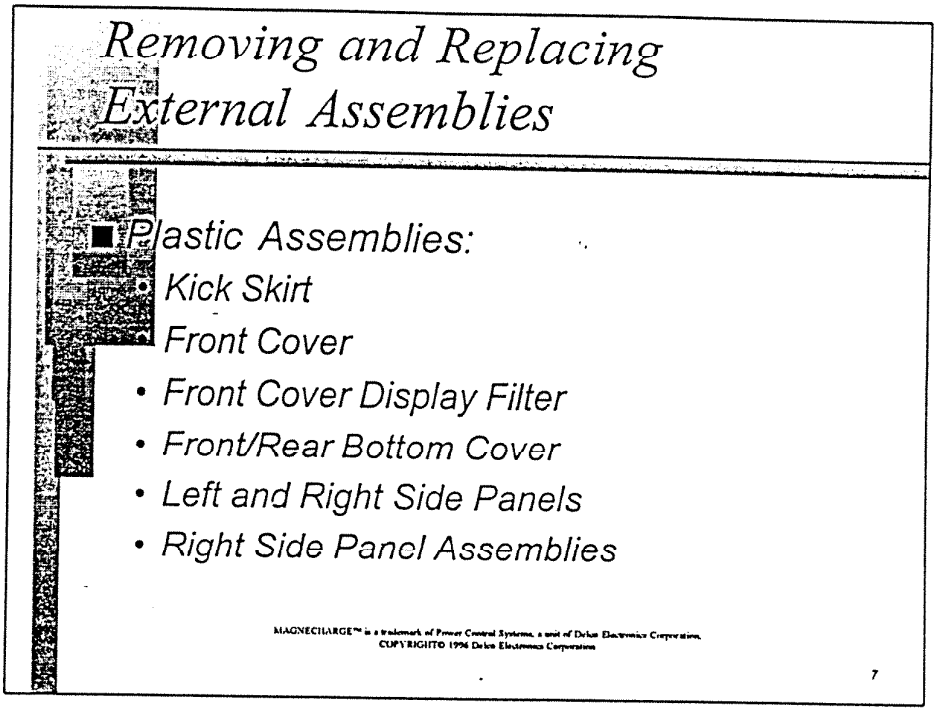
Inspection:

- Inspect charger for any defects...

  Do a through investigation of the unit to ensure there are no cracked, scratched or otherwise damaged pieces,

- Ensure power has been turned "off"

- Notate any problems...


Removing and Replacing External Assemblies
Plastic Assemblies:
Kick Skirt
Front Cover
Front Cover Display Filter
Front/Rear Bottom Cover
Left and Right Side Panels
Right Side Panel Assemblies
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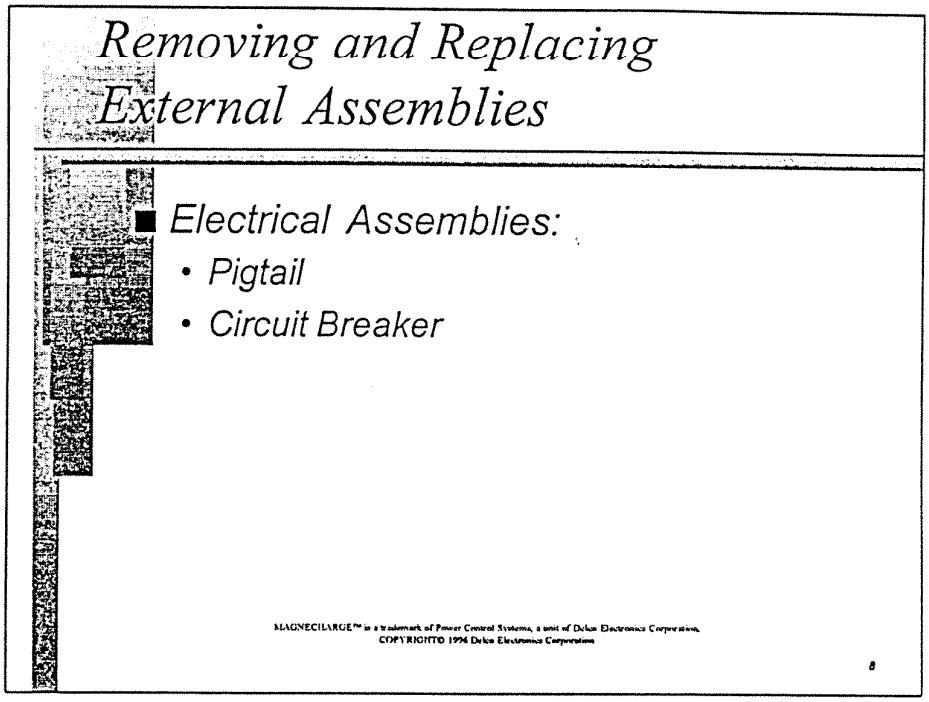
These subassemblies will be covered in the following sections.


Removing and Replacing
External Assemblies
Electrical Assemblies:
• Pigtail
• Circuit Breaker
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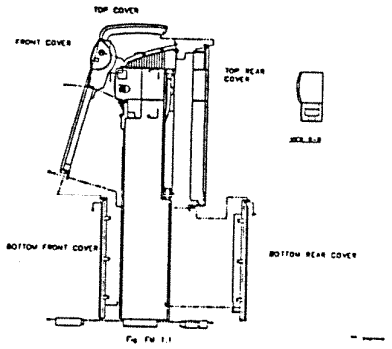
These subassemblies will be covered in the following sections.

Removing and Replacing External Assemblies

Floormount SCM



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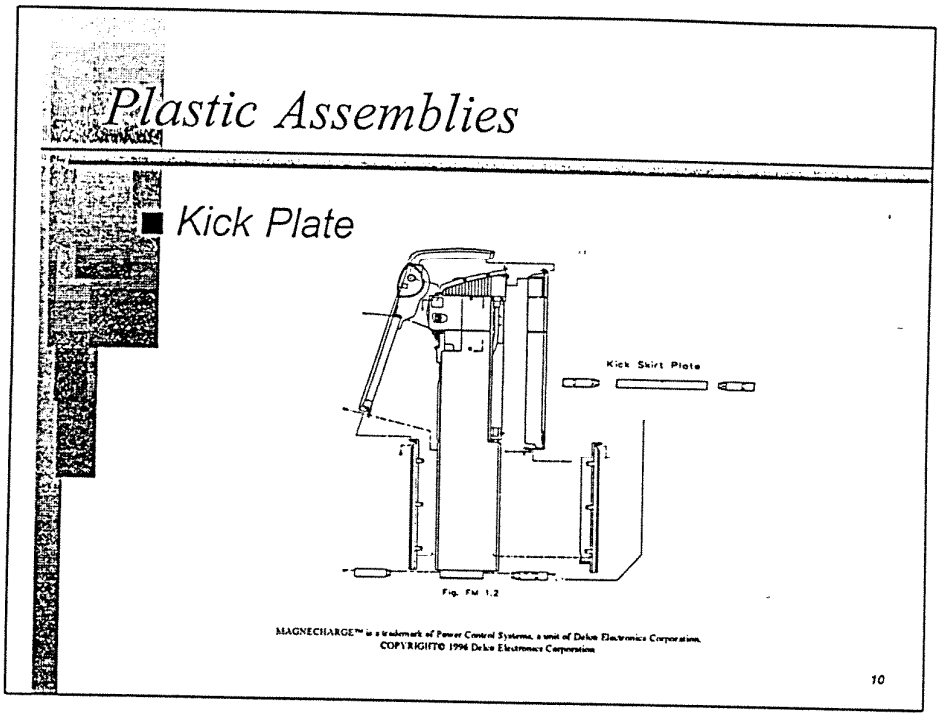
- Floormount overall view.


Plastic Assemblies
Kick Plate
Kick Skirt Plate
Fig. FM 1.2
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To remove the Kick Skirt :

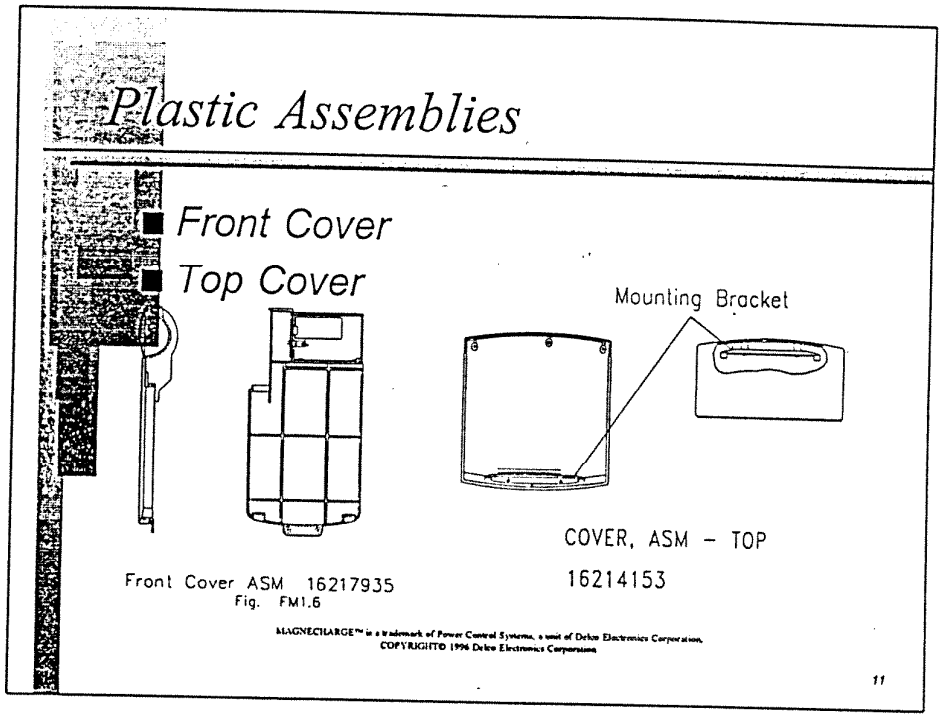
-Using a #2 screwdriver, locate and remove six screws (P/N 1T41023C) from the Kick Skirt (P/N 16213392) located at the bottom of the Floormount.

- Remove Kick Skirt from around the Floormount base.

(Refer to Figure FM 1.1 & FM 1. 2)

To replace the Kick Skirt:

- Position Kick Skirt around lower section of SCM Assy.
- Replace six screws



To remove the Front Cover :

-Using an # 2 Phillips screwdriver, locate and remove two screws (P/N 92005A422) from the front bottom of the Front Cover, (P/N A16217935) (Refer to Fig. Fm 1.6, FM 1.7, FM 1.6.1)

-Locate and remove one screw from the right side of the cover.

-Locate and remove one screw from the upper right side of the coupler Storage opening.

-Lift up on Front Cover to remove.

To Replace the Top Cover:

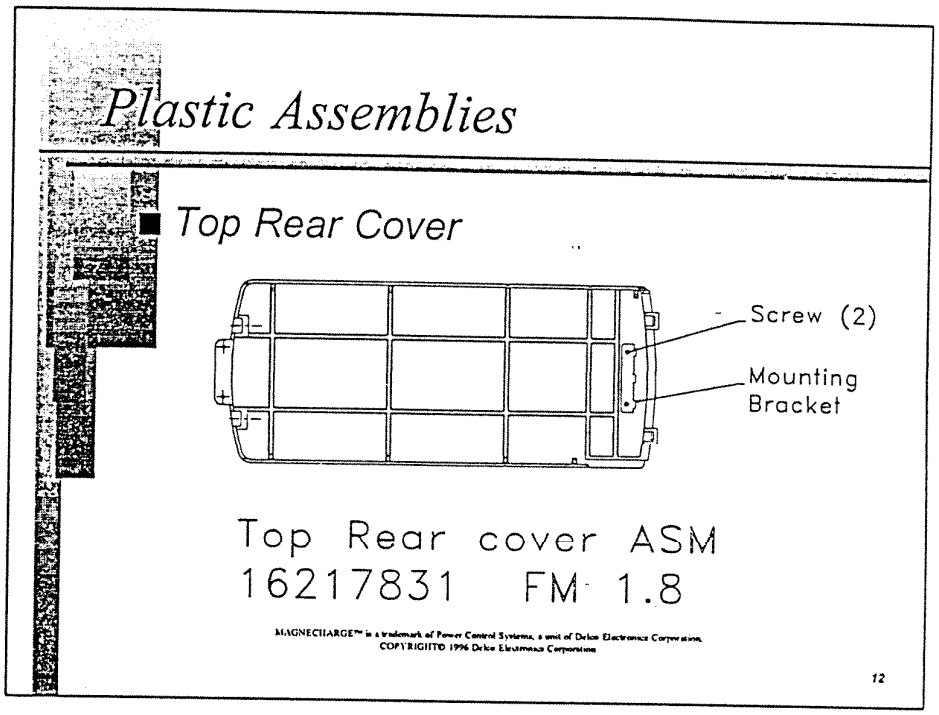
- Replace the Top Cover (P/N 1624153) and Top Cover rear Mounting Bracket (P/N 1624163) by removing two Phillips head screws.

- Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

To replace the Front Cover:

- Place Front Cover assembly onto charger so that all four screw holes are aligned,

- Replace all the screws.



To Remove Top Rear Cover (P/N C16217831)

1) Remove two (2) screws (P/N 92005A422) from bottom of the Top Rear cover.

(Refer to Fig. Fm 1.8)

2) Lift up on Top Rear cover and remove. The circuit breaker door on the Right Side Panel will now come out.

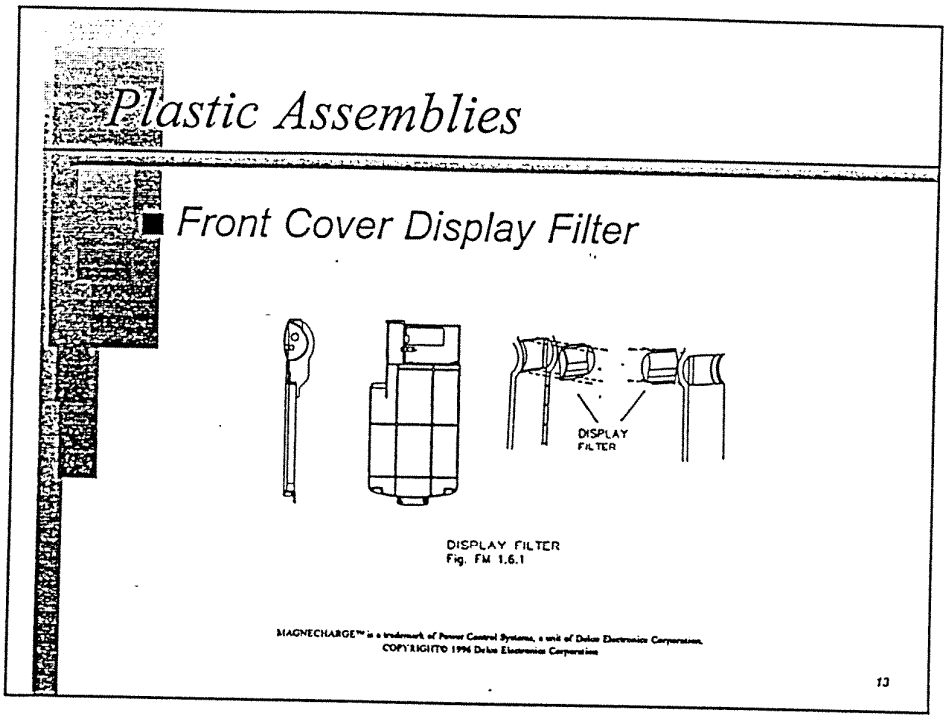
3) If necessary remove Mounting Bracket (P/N 16214170) by removing two Phillips head screws.

4) Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

To Replace Top Rear Cover

1) Place Top Rear cover,so that,the mounting bracket tabs catch properly. Be careful not to catch the power and communication wires on the SCM chassis side.

2) Install two Phillips head screws.

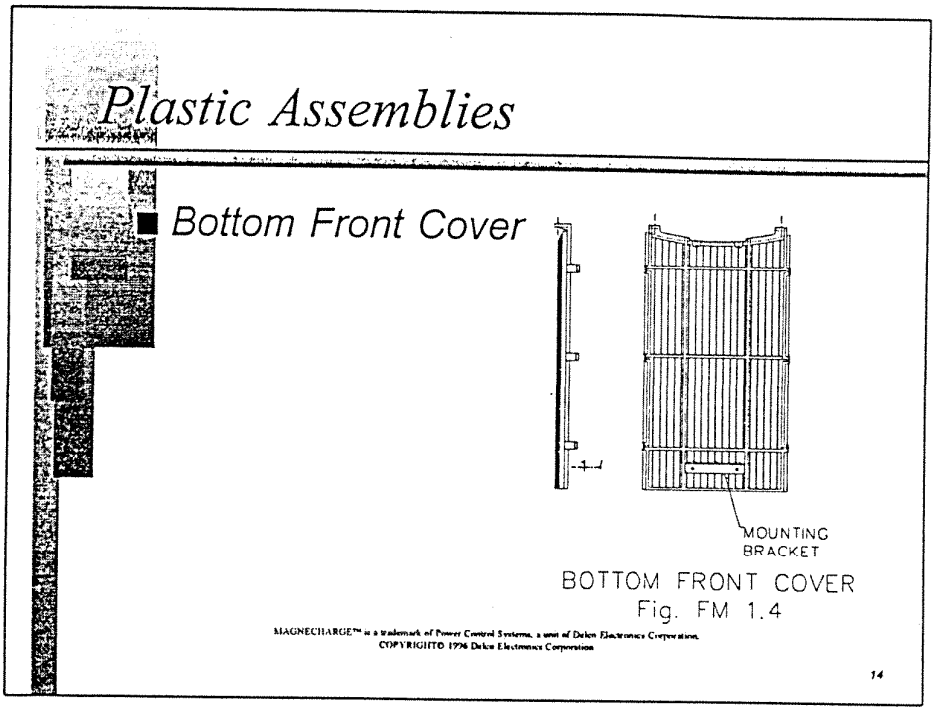


To remove the Front Cover Display Filter (P/N A16217934):

- After the Front Cover has been removed, remove the Top Cover.
- Gently lift the Display Filter tabs and push the display through cover to remove.
- Remove filter and replace with new piece.

To replace Front Cover Display Filter:

- Place new Display Filter on to the Front Cover and replace the Top Cover.
- Reassemble.


Plastic Assemblies
Bottom Front Cover
MOUNTING BRACKET
BOTTOM FRONT COVER
Fig. FM 1.4
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To remove the Bottom Front Cover (P/N A16214195):

- Remove two (2) screws (P/N 92005A422) from the top of the Bottom Front panel.

(Refer to Figure FM 1. 4)

- Slide the panel downward to remove.

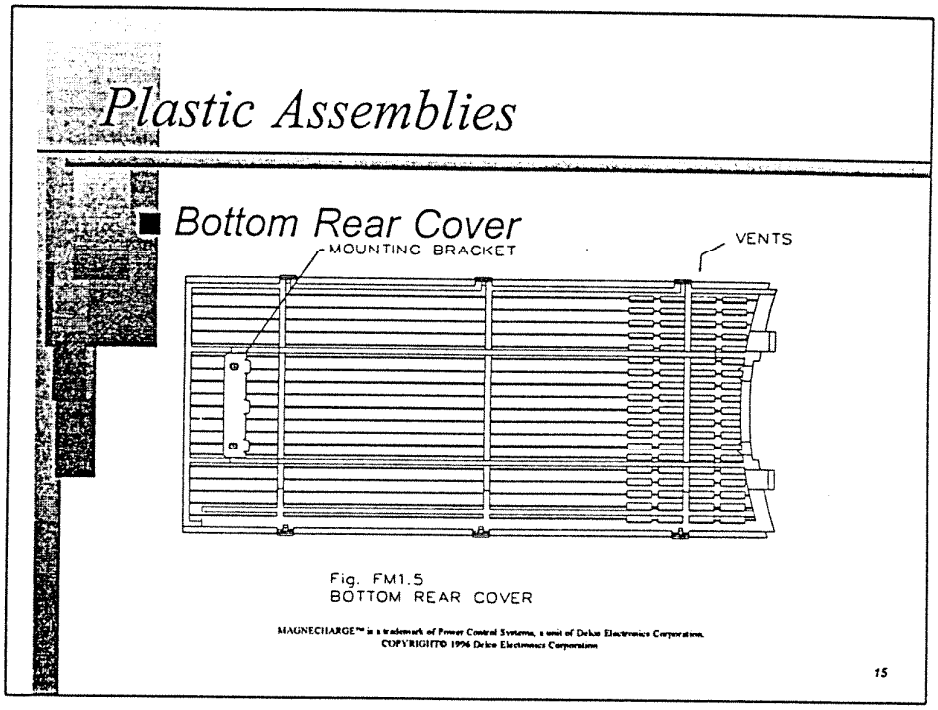
- If necessary remove Mounting Bracket (P/N 16214170) by removing two Phillips head screws.

- Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

To Replace Bottom Front Cover:

- Align Panel tabs with tab slots of SCM chassis.

- Slid panel upwards. Install two Phillipshead screws.



To remove the Bottom Rear Cover (P/N A16214193):

- Remove two (2) screws (P/N 92005A422) from the top of the Bottom Rear panel.

(Refer to Figure FM 1. 5)

- Slide the panel downward to remove.

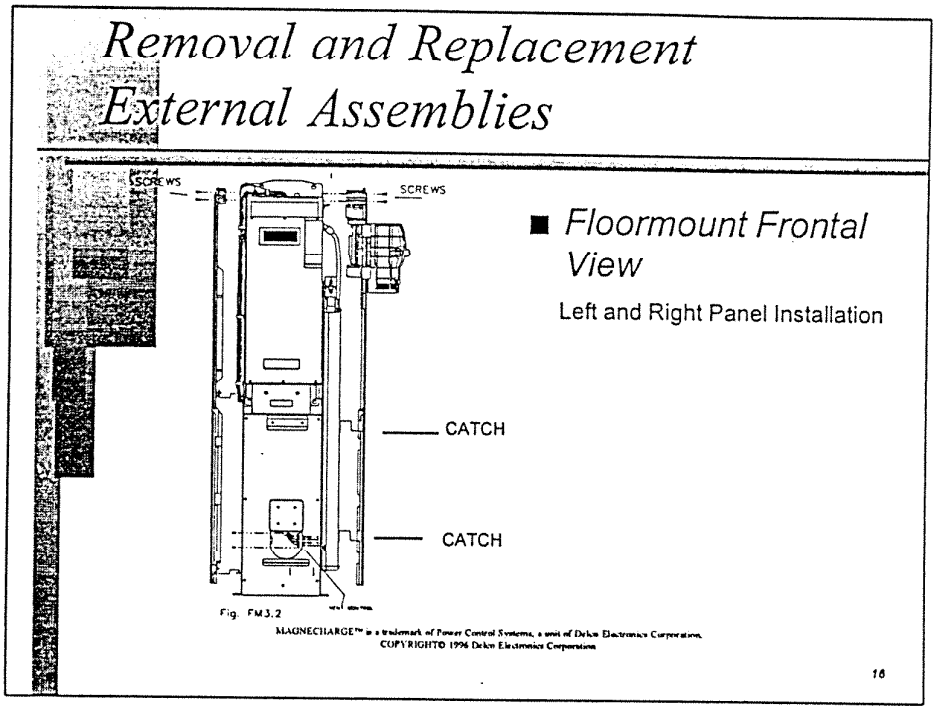
- If necessary remove Mounting Bracket (P/N 16214170) by removing two Phillips head screws.

- Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

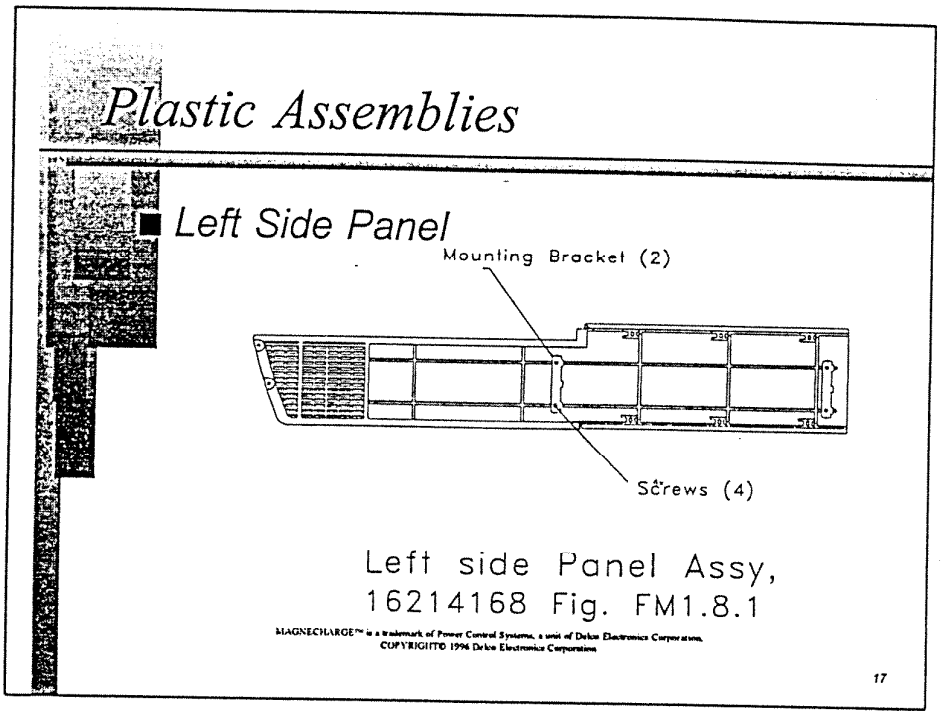
To Replace Bottom Rear Cover:

- Align Panel tabs with tab slots of SCM chassis.

- Slid panel upwards. Install two phillips head screws.



-Floormount frontal view, showing side panel catch locations.



To remove Left Side Panel (P/N 16214168) -

- Remove Paddle from the holster.

- Remove two (2) screws (P/N 92005A422) from the top of the Left Side Panel.

(Refer to Figure FM 1.8)

- Lift up on panel to remove.

- If necessary remove Mounting Bracket (P/N 16214170) by removing two Phillips head screws.

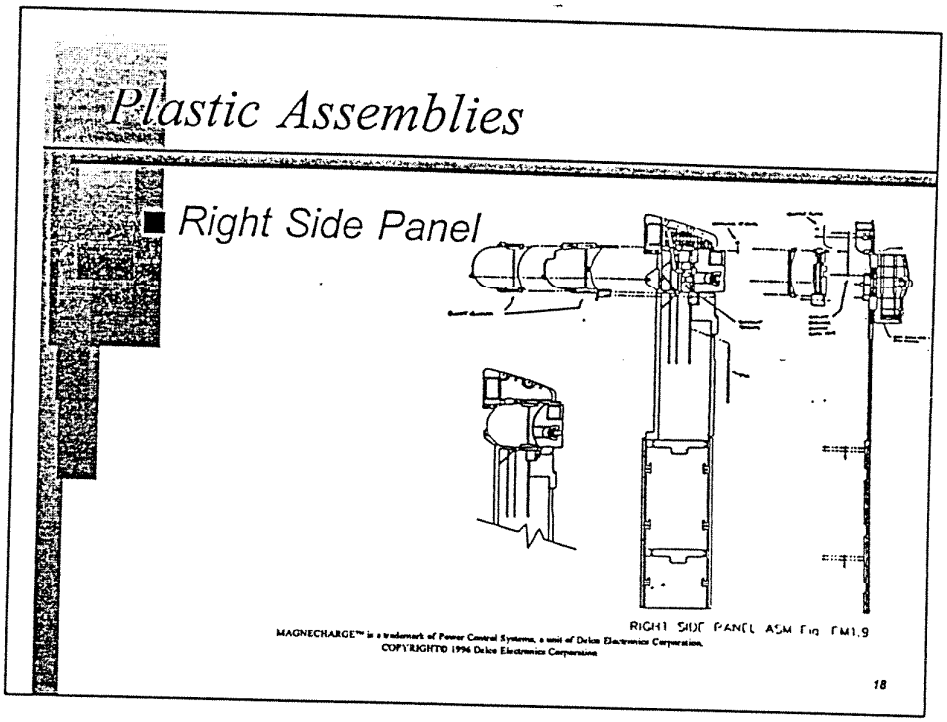
- Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

- To replace Right Side Panel components reference section C. 'Plastics replacement' step 3.

To replace Left Side Panel::

- Set Panel mounting bracket tabs into tab slots on the SCM chassis.

- Install two Phillips head screws at top of panel.


Plastic Assemblies
Right Side Panel
RIGHT SIDE PANEL ASM Fig FM1.9
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To remove Right Side Panel (P/N 16214171) -

- Remove Paddle from the holster.

- Remove two (2) screws (P/N 92005A422) from the top of the Right Side Panel.

(Refer to Figure FM 1.9, 1.9.1)

- Lift up on panel to remove.

-- If necessary remove Mounting Bracket (P/N 16214173) by removing two Phillips head screws.

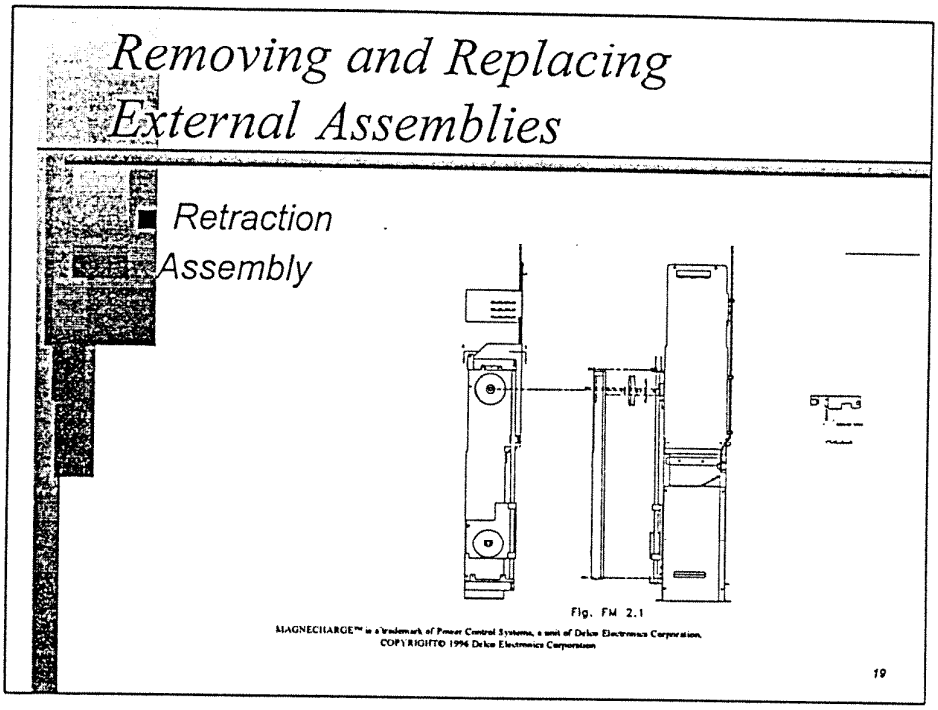
- Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

- To replace Right Side Panel components reference section C. 'Plastics replacement' step 3.

To replace Right Side Panel::

- Set Panel mounting bracket tabs into tab slots on the SCM chassis.

- Install two Phillips head screws at top of panel.



C. Retraction Assembly Removal

(Refer to DWG 16214197 and FIG. FM 2.1)

A.) Perform section III the "Plastics Removal" Procedure.

B.) Paddle Cable Extraction:

1) Remove five (5) screws (P/N 16212428) from Retraction cover (P/N 16217830).

Remove cover.

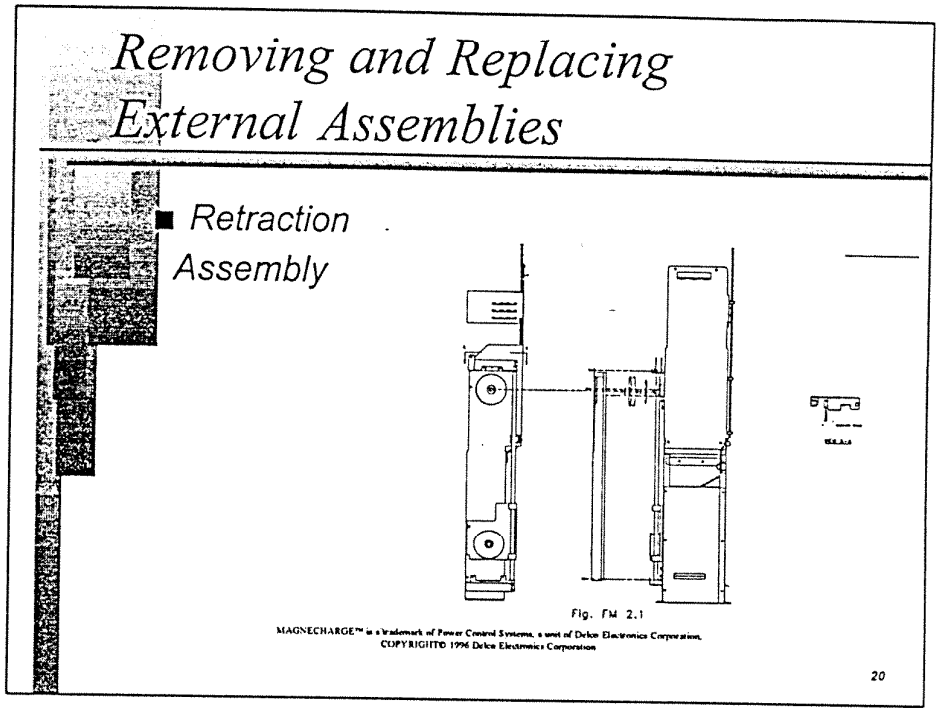
(Refer to Fig. FM 2.1)

2) Remove Shoulder Screw (P/N 16222995) from the Pulley Wheel assembly of Output Cable on Paddle end .

(Refer to Fig. FM 3.3)

3) Remove Clamp Screw (P/N 16198864).

4) Carefully disengage Output Cable from Retraction assy pulleys.



C) Retraction Assy - Top Wheel Replacement

(Refer to Fig. FM 2.1)

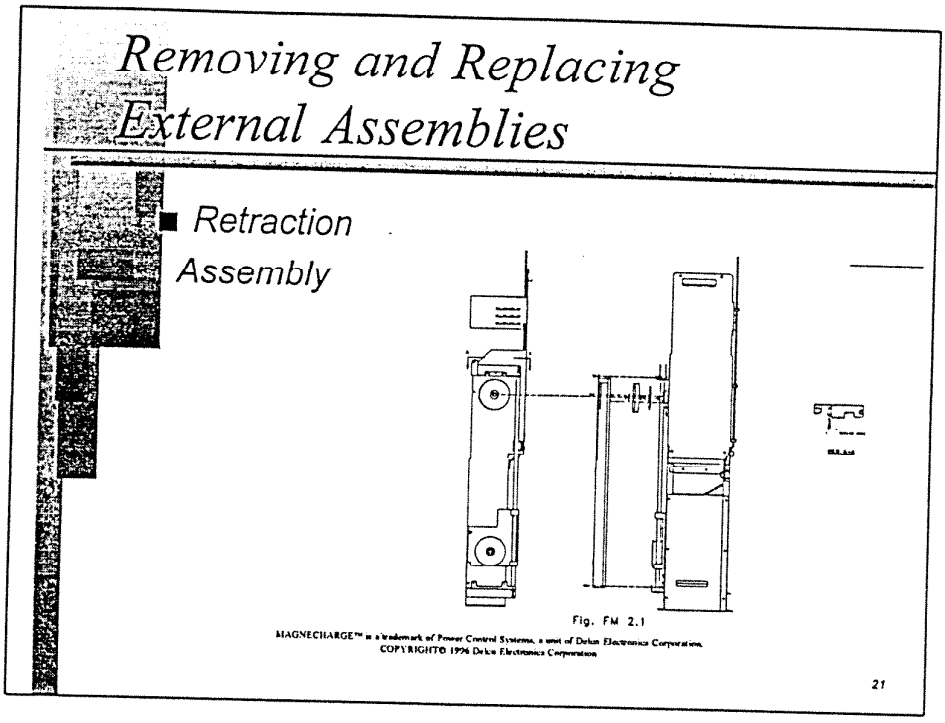
1) Remove Retaining Ring (P/N 16229425) on Top Wheel (P/N 16217931).

2) Remove Wheel, Washer (P/N 16223017), Sleeve Bearing (P/N 16228426) , and

Washer,Large,Teflon (P/N 16223016) .

3) Replace Wheel, Washer (P/N 16223017), Sleeve Bearing (P/N 16228426) , and

Washer,Large,Teflon (P/N 16223016) .



D) Double Wheel Assy (P/N 162191132) and Shaft Replacement (P/N 162191134):

(Refer to Fig. FM 3.3)

1) Remove (2) bolts (P/N 11500914), remove DBL retraction shaft.

If necessary, replace Shaft and re-assemble Retraction assy.

2) Remove (1) DBL Wheel Mechanical Assy. Replace or Repair Assy as required.

This section is for sub-components replacement of the DBL Wheel Mech Assy:

2a. Remove (2) Linear Retraction Bearings (P/N 16231361). Press in replacement parts. Re-install assy on shaft and re-assemble Retraction assy.

(The following steps do not require the DBL Wheel Mech Assy to be removed from the Retraction Shaft.)

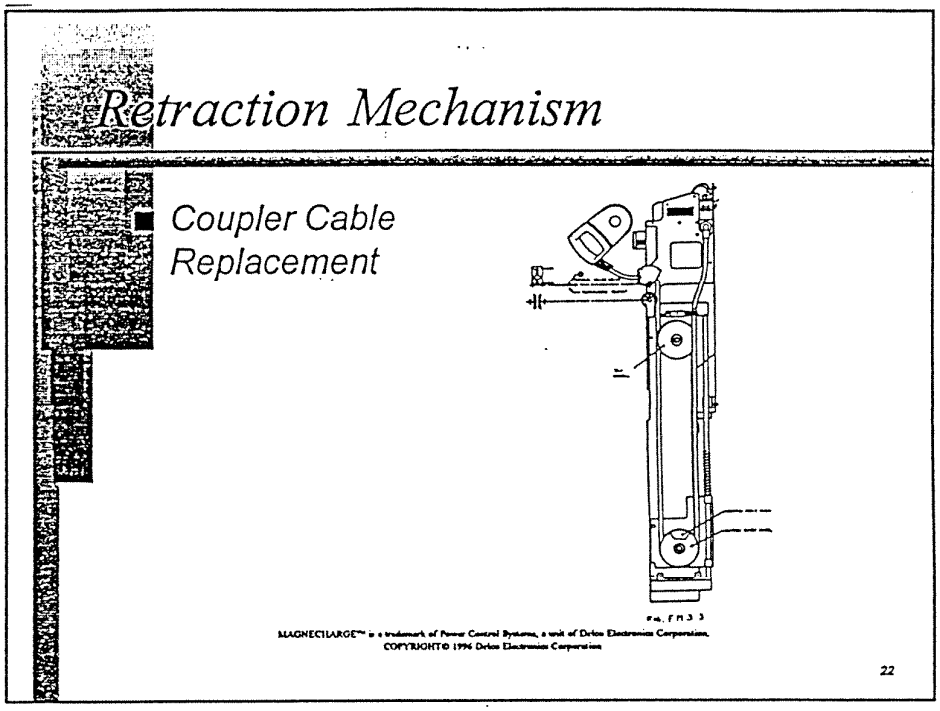
2b. Remove Stem Bumpers (P/N 16228440), install new components.

2c. Remove Retaining Ring (P/N 16223555), Remove Teflon washer (P/N 16223017), Bottom Inner and Outer Retraction Wheels, and (2) Teflon washers (P/N 16223016). Replace Sleeve Bearing by pressing it into the appropriate wheel.

Use Sleeve Bearing (P/N 16228426) for the Inner Wheel.

Use Sleeve Bearing (P/N 16228427) for the Outer Wheel.

Re-install assy on shaft and re-assemble Retraction assy.



E)Coupler Paddle Cable Installation

1) Remove Cover - Retraction, from Frame ASM.

(Refer to Fig. FM 3.3)

2) Starting from the right side of the retraction assembly, route the cable CW around the

bottom outer wheel.

Note: Lift the Double Wheel Assy. to facilitate routing the cable around the bottom pulleys.

3) Continue routing the cable CW around the top wheel.

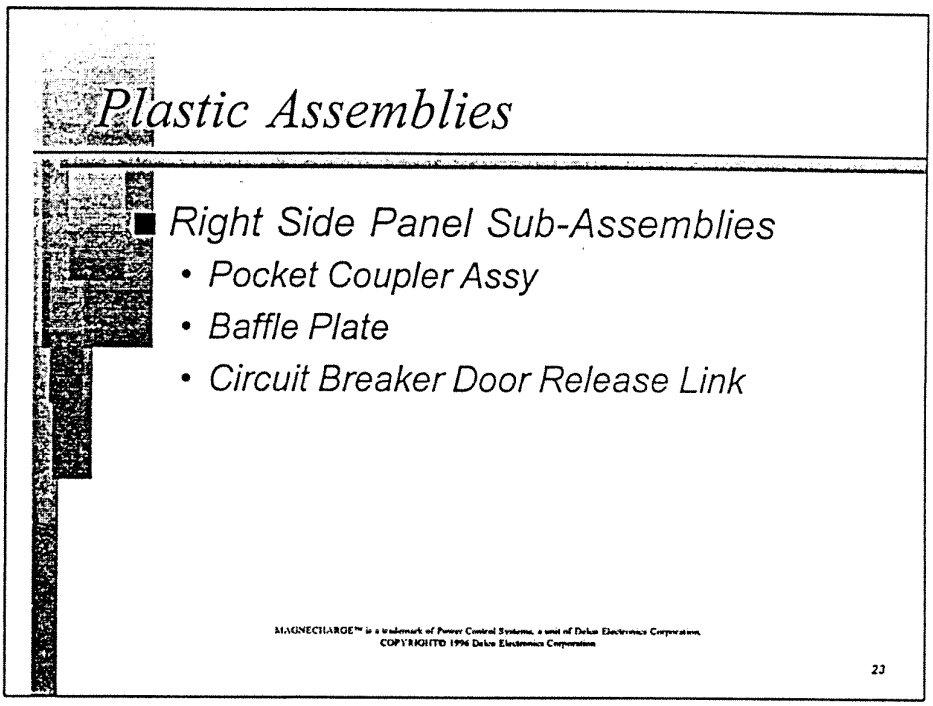
4) Continuing CW, Thread the Coupler Paddle between the cable and the chassis to

facilitate routing the cable around the bottom inner wheel.

5) Pull Coupler Paddle up and install Pulley Wheel (Part of Coupler Paddle ASM).

6) Install the Wheel - Pivot (P/N A16214147), Bearing (P/N 7C55MPS1906), and Shoulder Screw (P/N 16222995).

7) Install Cover - Retraction back onto Frame ASM.


Plastic Assemblies
Right Side Panel Sub-Assemblies
• Pocket Coupler Assy
• Baffle Plate
• Circuit Breaker Door Release Link
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To remove the Pocket Coupler assembly :

-Using a Phillips screwdriver, remove three screws from the back of the upper half of the Pocket Coupler, and one screw from the lower half.

-Lift up on Pocket Coupler to remove.

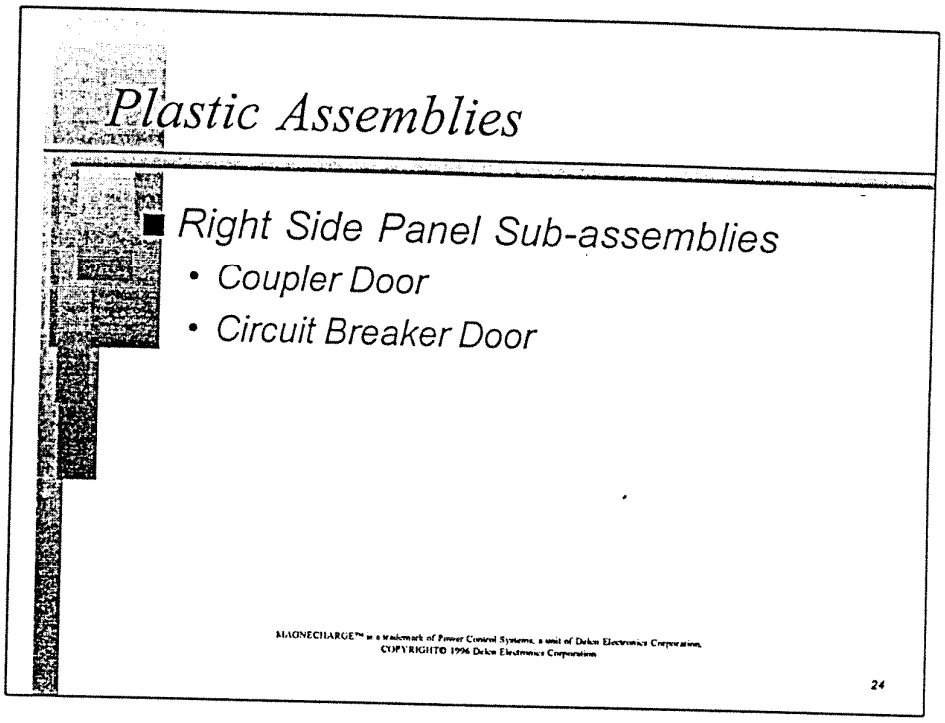
- Re-attach the pocket by placing new piece on right side panel and replacing the four three Torx screws.

To Remove Baffle Plate :

- Remove two Phillipshead Screws from the Baffle Plate (P/N 16218073). Remove Plate.

To replace door release link:

- Remove three Phillipshead Screws and one Extension Spring (P/N 16229428) from the Circuit Breaker door release Link ASM (P/N 16214175). Remove Link ASM.


Plastic Assemblies
Right Side Panel Sub-assemblies
• Coupler Door
• Circuit Breaker Door
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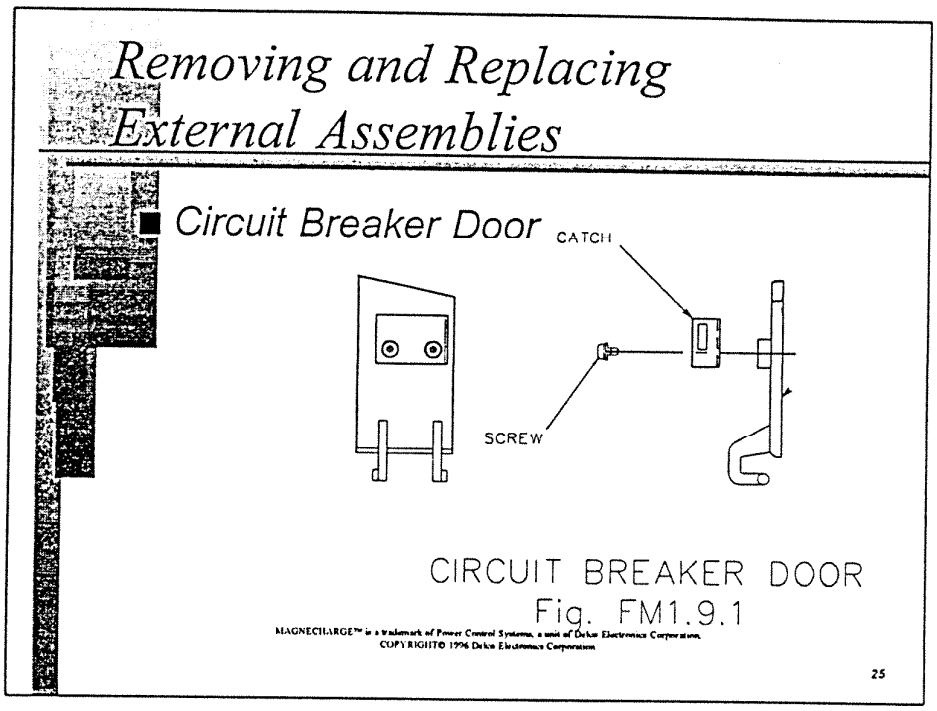
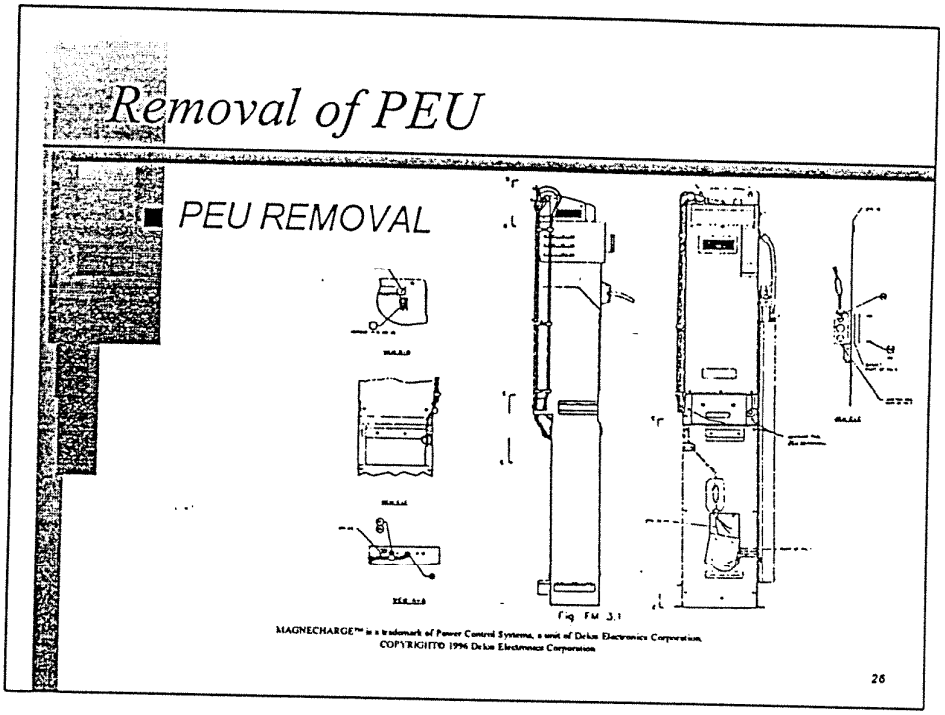
To remove Coupler Door:

- Remove (1) Retainer - E Ring (P/N 16231473) from the top of the Coupler Door Pin (P/N 16214190).
- Rremove Pin.
- Remove one Phillipshead Screws from the door Detent Spring (P/N 16217836). Remove Detent Spring.
- Remove Coupler Door (P/N 16214184).



To remove the Circuit Breaker door:

- From the back of the panel, push in side tabs on door assembly,
- From the front of the panel, push door through panel and remove,
- Push new door through opening in panel (from the back) to replace.


Removal of PEU
PEU REMOVAL
Fig FM 3.1
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C) Power Cable removal and Vent Control Cable/RS-232 Cable disconnect:

(Refer to Fig. FM 3.1)

1) Remove four (4) Screws (P/N) from the AC Junction Box Cover Plate.

Disconnect the three AC Power lines from the Source power.

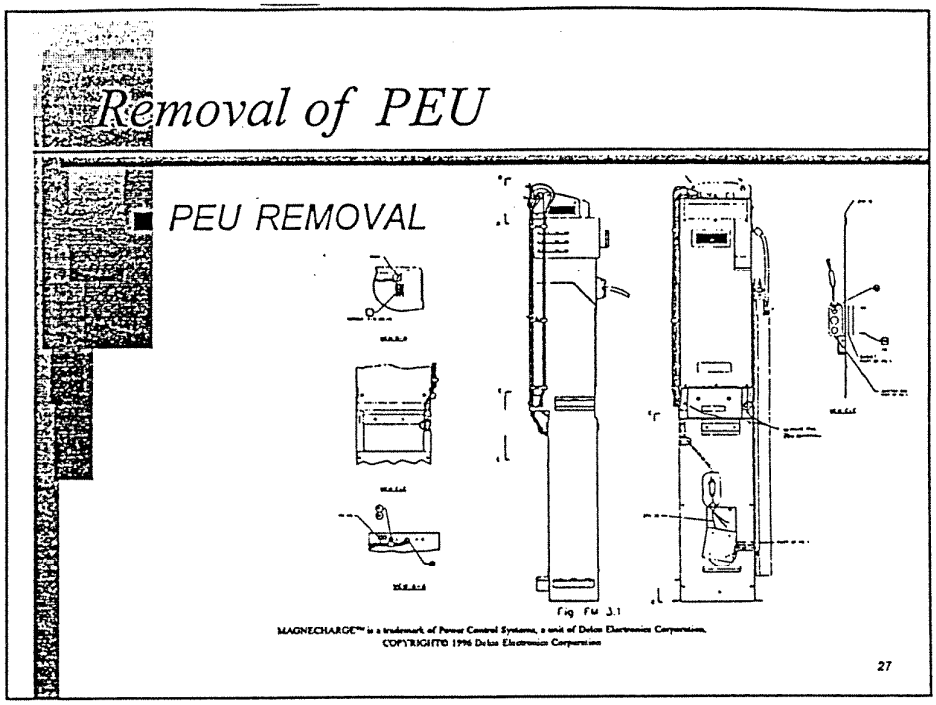
2) Loosen Cable Feed thru hole Clamp at the top of the AC Junction Box.

3) Remove three (3) Nuts (P/N 16148279), from the cable retaining clamps, on the left side of the SCM Frame ASM.

Starting at the AC Junction Box, carefully reroute the AC Power Lines (two black, one green), out from the chassis, and back through the three clamps.

4) Locate the Vent Control Terminal at the top rear of the SCM. Loosen the four terminal lugs and remove the Vent control wires.

5) Locate the RS-232 connector at the top of the PEU. Loosen the two Phillips head screws, and remove the connector.


Removal of PEU
PEU REMOVAL
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D) PEU Removal

1) Loosen two (2) Screws (P/N 16222985) (do not remove screws) located at the rear top of the PEU,and Remove two(2) located at the rear bottom of the PEU.

(Refer to Fig. FM 3.1)

2) Carefully lift the PEU up, forward and out of the chassis.

CAUTION: This is a two person operation.

E) PEU Replacement:

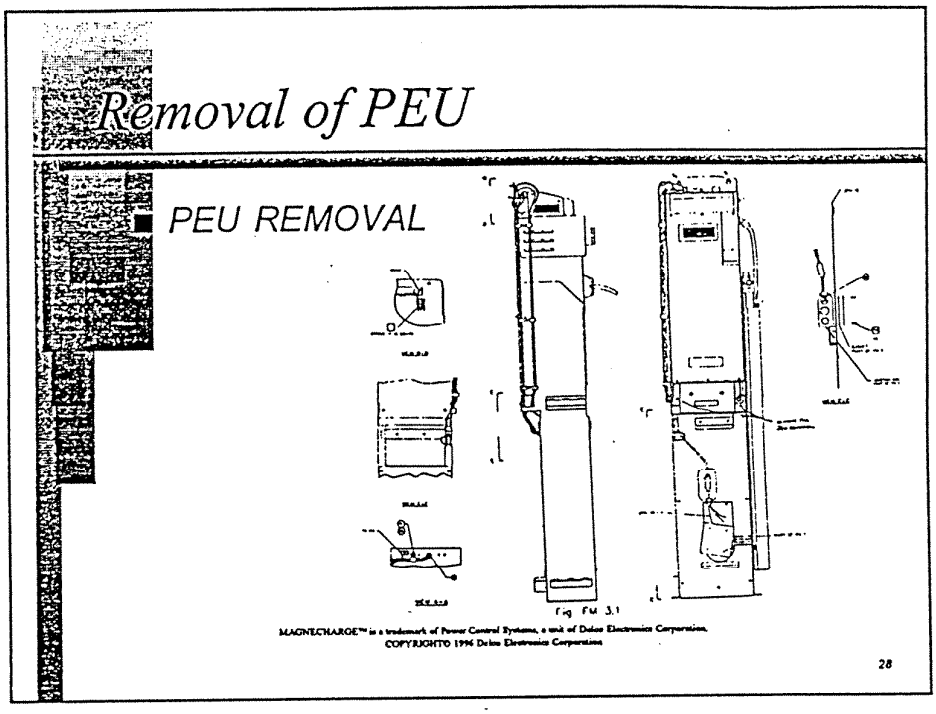
CAUTION: This is a two person operation.

1) Carefully lift the PEU up and lower it into the chassis.

2) Tighten two (2) Screws (P/N 16222985) located at the rear top of the PEU,

and Insert two(2) located at the rear bottom of the PEU.

(Refer to Fig. FM 3.1)



C) Power Cable installation and Vent Control Cable/RS-232 Cable re-connect:

(Refer to Fig. FM 3.1)

1) Starting at the AC Junction Box, carefully reroute the AC Power Lines (two black, one green), out from the chassis, and back through the three clamps.

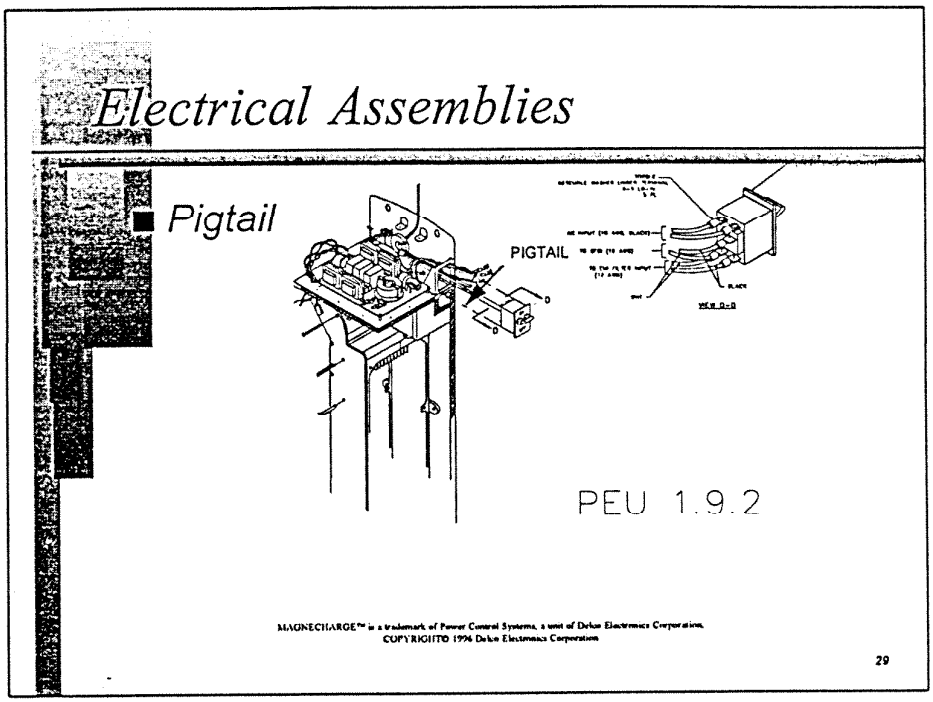
2) Tighten three (3) Nuts (P/N 16148279), to the cable retaining clamps, on the left side of the SCM Frame ASM.

3) tighten Cable Feed thru hole Clamp at the top of the AC Junction Box.

4) Tighten four (4) Screws of the AC Junction Box Cover Plate.

5) Locate the Vent Control Terminal at the top rear of the SCM. Re-connect the Vent control wires and tighten the four terminal lugs.

6) Locate the RS-232 connector at the top of the PEU. Re-connect the connector and tighten the two Phillips head screws.



To remove the Pigtail:

-After removing plastics, locate and remove three screws with a # 1 Phillips screwdriver from the Chassis Inner Top,

- Pull top up and away from chassis,

- Locate circuit breaker and remove two screws from the top terminals,

- Disconnect Green groundwire,

- Pull pigtail assembly away from breaker then pull wires through conduit to remove.

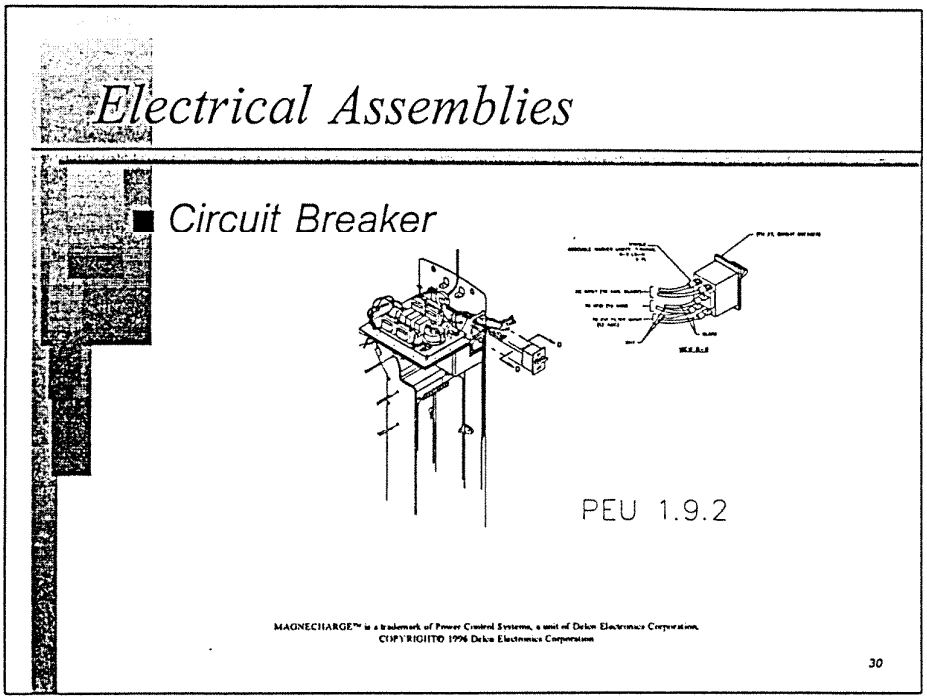
Note: Do not disturb toroid (choke) and wires wrapped around the assembly.

To replace Pigtail:

- Re-connect the two Pigtail wires to the two top terminals of the circuit breaker, re-connect Green groundwire,

- Route wires through conduit and place choke in the slot between the EMI filter and chassis,

- Replace Chassis Inner Top.



To remove Circuit breaker:

-After removing plastics, locate and remove three screws with a # 1 Phillips screwdriver from the Chassis Inner Top,

- Pull top up and away from chassis,

- Locate Circuit Breaker and press down two tabs located on top of the part,

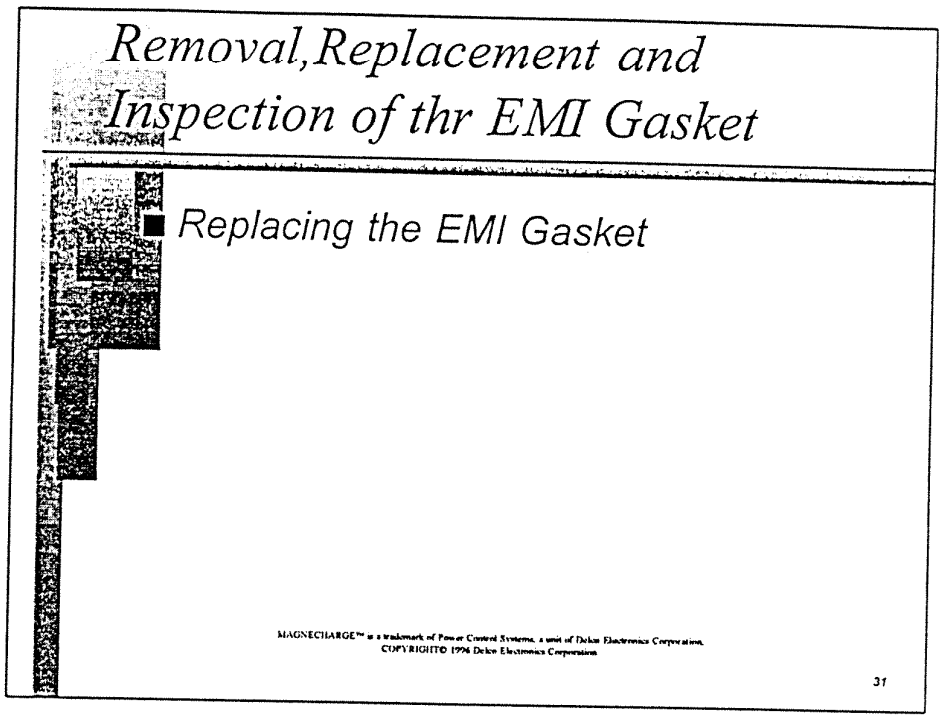
- Pull Circuit Breaker away from main chassis and remove five screws (two from the top terminals and three from the bottom terminals)

Note: Before removing wires, notate the placement of each wire on the breaker. This will ensure correct re- wiring of circuit breaker.

Replacing the Circuit Breaker.

- Re-wire breaker according to your notes or drawing above,

- Push the breaker through opening in the main chassis and ensure that the top and bottom tabs snap into place.


Removal,Replacement and
Inspection of thr EMI Gasket
Replacing the EMI Gasket
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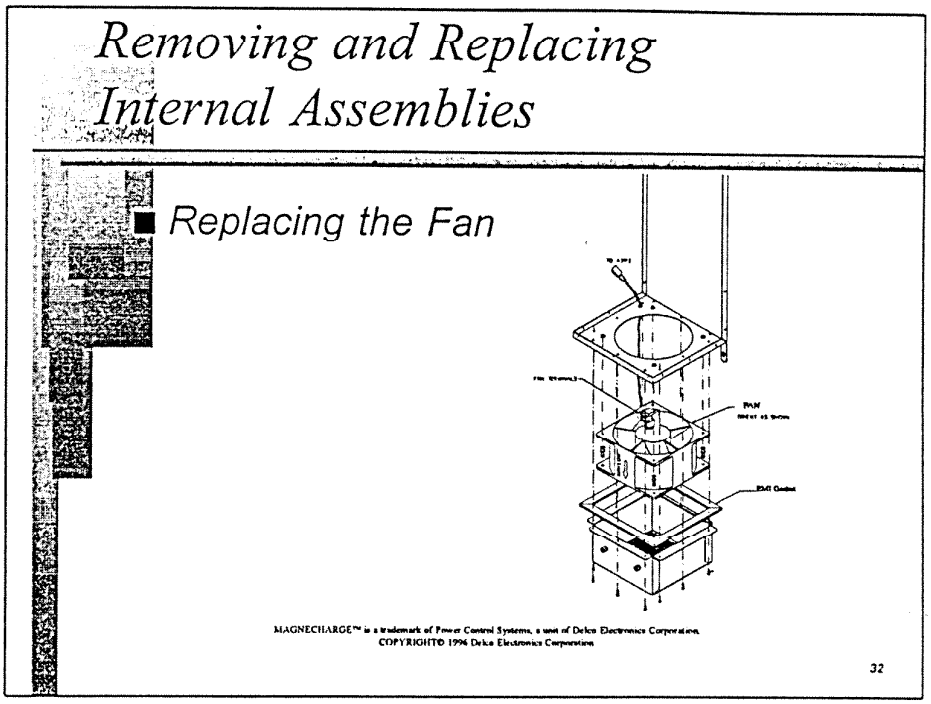
To replace gasket material:

- Examine the EMI gasket and determine the condition of each section on the chassis,

- If there is a damaged section, use an X-acto knife and cut out the section to be replaced, remove any excess adhesive with alcohol,

- Measure a length of gasket material equal to the removed section, peel off paper backing and apply on chassis, smooth area out with fingers.


Removing and Replacing
Internal Assemblies
Replacing the Fan
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To replace the Fan:

- Locate and remove twelve screws from fan cover,
- Locate and remove four screws holding the fan in place,
- Remove fan connector assembly from fan terminals,
- Replace fan and re connect fan connector assembly to terminals,
- Replace four fan screws,
- Replace cover by replacing twelve chassis screws.

Summary

- Completion of this course allows the technician to disassemble a Floor mount SCM and replace certain sub-assemblies.
- The knowledge gained will aid in the timely replacement and repair of customer units.
- Want to learn more about the SCM?

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MAGNE CHARGE

WALL MOUNT CHARGER INSTALLATION GUIDE (WM200)

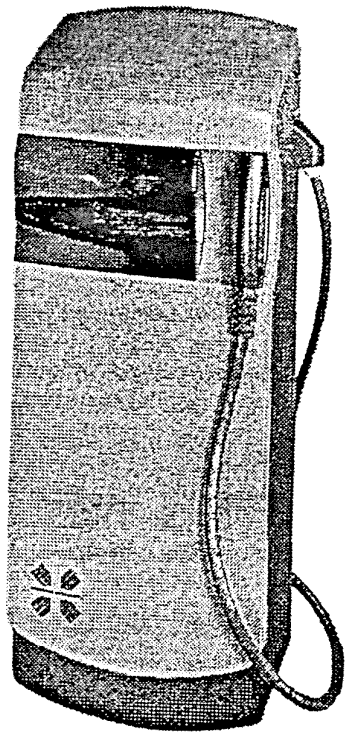
Before you begin -
Read these instructions completely, including the important safety instructions.
Note to Installer- Be sure to leave these instructions with the consumer.
Note to Consumer - Keep these instructions for future reference.

Required Installation Tools and Materials

- Four #12 x 2 1/2 inch wood screw, zinc plated
- Common hand tools
- 6 MM wrench
- Torque wrench and 6 mm crows foot
- Philips #2 - screwdriver
- Torx Plus driver M20
- Qty 4 (6 mm) self-locking nuts
- Qty 4 wire nuts (8-10 AWG)
- Bracket - Wall Mount Charger (WM200)
  (Refer to text for mounting bracket selection)
- 6 MM Socket with 10 in extention
- Qty 2 (6 mm) Flat washers

Inventory

- Owners Manual
- Installation Manual
- Warranty Card
- Wall Mount Charger (WM200)



ELECTRIC VEHICLE CHARGER

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS--

This installation guide contains important instructions that should be followed during installation of the MagneCharge™ Wall Mount Inductive Charger (WM200). **Carefully read these instructions before installing the charger:**

- VENTILATION - This charger contains provisions for control of an external ventilation system (e.g., fan turn on/off) during charging. If ventilation is required during charging, connect an external ventilation system to the charger per instructions contained in the VENTILATION section of these instructions. Improper connection of the ventilation control may lead to hazardous or explosive gas build up during charging. **Refer to the vehicle Owner's Manual to determine if the vehicle requires a ventilation system while charging. If the vehicle Owner's Manual is unclear or does not address ventilation requirements, contact the service representative where the vehicle was purchased.**
- When installing the charger, it must be mounted at least 46 cm (18 in) from the bottom of the charger to the floor.
- Do not install the charger in a location that exposes the charger to sources of extreme heat.
- Disconnect power to the charger branch circuit at the service panel prior to installation.
- The charger should be installed by a qualified electrician in accordance with all local electrical codes and ordinances and the instructions contained in this Installation guide.
- Do not install in a location that blocks the air intake (upper left side) or exhaust (bottom) vents. Allow at least 46 cm (18 in) of clearance from any wall or fixture.
- Do not install in a location that exposes the charger to rain or excessive moisture.
- GROUNDING INSTRUCTIONS - The charger should be connected to a grounded, metal, permanent wiring system. An equipment-grounding conductor should be run with circuit conductors and connected to equipment-grounding terminal or lead on the battery charger. Connections to the battery charger should comply with all local codes and ordinances.

The following symbol may be found in this manual or on the labels affixed to the charger.

This symbol alerts the installer to the presence of dangerous voltages which may constitute a risk of electrical shock

INSTALLATION

Read all installation requirements and instructions before performing the installation.

Requirements

NOTE: Refer to the vehicle Owner's Manual to determine if the vehicle requires ventilation while charging. If the Owner's Manual is unclear or does not address ventilation requirements contact the service representative where the vehicle was purchased. For all vehicles that require ventilation systems, refer to the section in this installation guide titled VENTILATION.

1. The charger requires a dedicated branch circuit rated at 208-240 VAC (single phase) with a minimum capacity of 40 amps and an overcurrent protection of 40 amps.

   NOTE: Do not install a Ground Fault Circuit Interrupter (GFCI) in the branch circuit. The charger contains a built-in ground fault protection device that may cause nuisance tripping of commercially available GFCIs.

2. The junction box for power connections should be located within sixteen (16) inches above the center line of the charger to be in reach of the wiring attached to the charger and be installed per local code.

3. If Ventilation is required mount the Ventilation Control Junction Box within 24 inches above the top of the mounting bracket and to the left of the Power Junction Box.

4. If the unfinished wall mounting bracket is being installed (see Figure 3 B & C), measure the distance between the centers of the wall studs. The distance measured must be 41 cm (16 in).

5. The charger must be mounted at least 46 cm (18 in) above the floor. Additionally, the area beneath the charger must remain unobstructed for proper air flow.

6. To meet requirements for handicap access to the charger, the top of the mounting bracket must not exceed 147 cm (58 in) from the floor.

7. The charger must be mounted in a location that allows an unobstructed clearance of at least 46 cm (18 in) on both sides of the unit to provide proper air flow and to provide access to service the unit.

8. For Ventilation Systems, see VENTILATION CONTROL SIGNAL INTERFACE SPECIFICATION section.

9. The charger must be mounted within access of the electric vehicle charge port (inlet). Note that the charge coupler maximum cable length is 245 cm (8 ft).

WARNING: Turn off the circuit breaker at the service or distribution panel supplying the charger before attempting to perform the following steps.

Instructions

1. Unpack the charger from the shipping container.

   NOTE: The packaging material and shipping container are reusable materials. Save these items and return them to the Distributor.

2. Insure the charge coupler is in its holster as shown in Figure 1.

3. Familiarize yourself with the charger.

   a) Note the location of the two slotted mounting holes as shown on Figure 1.

   b) Note the location of the two bottom mounting holes as shown on Figure 1.

   c) Note the color of the three electrical wires; two black and one green.

      i) Two black 10 AWG wires are for input power.

      ii) One green 10 AWG wire is for chassis/ equipment ground.

NOTE: An external ventilation system may be required to reduce the risk of hazardous or explosive gases building up during indoor charging. Check the vehicle Owner's Manual to determine if the vehicle requires ventilation during indoor charging. If the charger is to be used with a vehicle that requires ventilation during indoor charging, the charger must be connected to a ventilation system that provides at least 197 cubic feet per minute (cfm) air flow during the charging cycle in accordance with the 1996 National Electric Code, ANSI/NFPA 70, (Article 625, 725).

4. If ventilation is not required use the mounting bracket for finished wall installations (Figure 3A, 7A) or the bracket for unfinished wall installations (Figure 3B, 7B). If ventilation is required go to step 6.

5. Using a #20 Torx Plus driver remove the three screws that secure the vent access cover (see Figure 5). Remove the Vent Control Access cover, disconnect the pigtailed wires, and proceed to step 12.

6. If ventilation is required use the mounting bracket for finished wall installations (Figure 3D, 7D) or the bracket for unfinished wall installations (Figure 3C, 7C).

7. Using a #20 Torx Plus driver remove the three screws that secure the vent access cover (see Figure 5).

8. Install a flexible metal conduit fitting onto the top of the vent access cover per Figure 8.

9. Connect a flexible metal conduit to the top of the charger's vent access cover.

10. Thread the 18 AWG wire through the metal conduit.

11. Reinstall vent access cover using a #20 Torx Plus driver. Hand tighten the three retaining screws (see Figure 5).

NOTE: Do not pull on the charger's power wiring or charge coupler cable.

BRACKET INSTALLATION

12. Depending on the bracket used, locate the center of the nearest stud(s) and to mark the location for the mounting screws using the bracket. Insure the bracket is level. **NOTE:** The measurement from the floor to the top of the bracket should be 147 cm (58 in).

13. Locate the center of each stud and drill pilot holes where the # 12 screws will be installed.

14. Fasten the bracket to the wall using four #12x2 1/2 inch zinc plated wood screws (see Figure 3).

15. Thread a 6 MM self locking nut on both of the top mounting studs of the bracket allowing a 1/4 inch gap between the nut and the bracket plate. This will allow for an easier installation of the charger (see Figure 2, View A).

CHARGER INSTALLATION

16. Remove the two screws holding the plastic valence from the bottom front of the charger and remove the valence (see Figure 4).

17. Lift the charger up to the bracket and place the top slotted mounting holes over the two 6 MM nuts installed in step 3 (see Figure 2, View A). Allow the charger to rest on the mounting studs between 6 MM nuts and the bracket surface.

18. Align the bottom of the charger so the mounting studs of the wall bracket slide through the bottom mounting holes of the charger.

19. Install the two remaining 6 MM self-locking nuts with flat washers on to the lower mounting studs.

20. Tighten all four nuts to a torque setting of 19 lbs-in.

21. Push on the charger's circuit breaker door to open (Figure 6, View A).

22. Set charger circuit breaker to the OFF (down) position as shown in Figure 6, View B.

23. Connect the flexible conduit from the top of the charger to the charger power source (see Figure 2).

24. Connect the wires using wire nuts as shown in Figure 2, View B as follows:

    Input power: 208 - 240 VAC

    Line 1 (HOT) BLACK WIRE

    Line 2 (HOT) BLACK WIRE

    Ground GREEN WIRE

    NOTE: Supply side of wire may be a different gauge of wire.

    NOTE: Neutral not required or connected. If the neutral wire is present cap it off with a wire nut.

25. Replace the cover on the junction box.

26. Re-install the plastic valence to the bottom front of the charger using the screws removed in step 16.

NOTE: If vehicle does not require ventilation go to SYSTEM TEST section (step 27).

NOTE: If vehicle requires ventilation continue installation with the VENTILATION section.

SYSTEM TEST

27. Turn on the circuit breaker located in the service panel, and set charger circuit breaker to the ON (up) position and close the circuit breaker access door .

28. Pull the charge coupler out of its holster. Verify the display reads "*******" and then changes to "CONNECT TO VEHICLE".

NOTE: If display does not illuminate, check all circuit breakers and wiring to the charger and check charger's input voltage.

NOTE: Refer all other problems to MagneCharge™ Sales and Service Representative.

29. Return charge coupler to holster.

30. The charger display will go blank.

31. The charger is now ready for use.

SITE CLEAN UP

32. Carefully recover the packing materials for return to the distributor.

33. Pick up all debris around the work area and sweep clean.

VENTILATION

NOTE: An external ventilation system may be required to reduce the risk of hazardous or explosive gases building up during charging indoors. Check the vehicle Owner's Manual to determine if your vehicle requires ventilation during indoor charging. If the charger is to be used with a vehicle that requires ventilation during indoor charging, the charger must be connected to a ventilation system that provides at least 197 cubic feet per minute (cfm) air flow during the charging cycle in accordance with 1996 National Electric Code (ANSI/NFPA 70), Article 625, 725.

WARNING: Turn off the circuit breaker at the service or distribution panel supplying the charger and ventilation before attempting to perform the following steps.

VENT ENABLE (refer to Figure 9)

1. Connect the RED Vent Enable (+12 VDC) to the Ventilation System's 12 VDC activation relay's positive coil terminal.

2. Connect the BLACK Vent Enable return to the Ventilation System's 12 VDC activation relay's negative coil terminal.

NOTE: If the activation relay terminals are not marked positive or negative then polarity is not an issue and the Vent Enable wires may be connected to either terminal without conflict.

VENT CONFIRM (refer to Figure 9)

3. If the Ventilation System contains an airflow (or similar)sensor, connect the white Vent Confirm wires to each terminal of the Confirmation sensor output switch.

4. If the Ventilation System confirmation is an additional set of relay contacts on the Activation Relay, then connect the white vent Confirm wires to the terminals designated for Vent Confirmation.

5. Continue installation with SYSTEM TEST (step 27).

VENTILATION CONTROL SIGNAL SPECIFICATIONS

A 12 VDC Ventilation Activation Relay (Normally Open) is required to switch the fan supply voltage.

Vent Enable

12 VDC, 50 ma (source)

Vent Enable Rtn

12 VDC Return (Switched)

Vent Confirm (Switch closure)

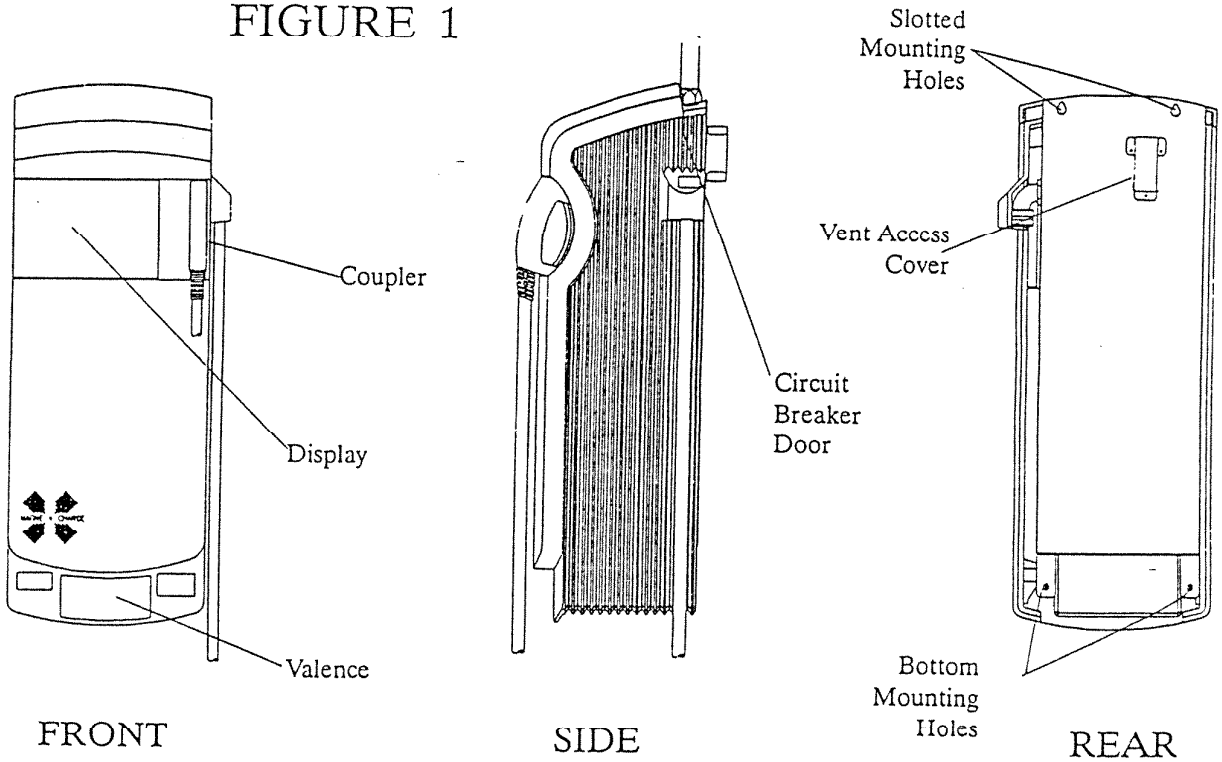
+5 VDC Switch voltage
0 VDC External Vent installed/functioning

Vent Confirm Return

+5 VDC Return

INSTALLATION

FIGURE 1



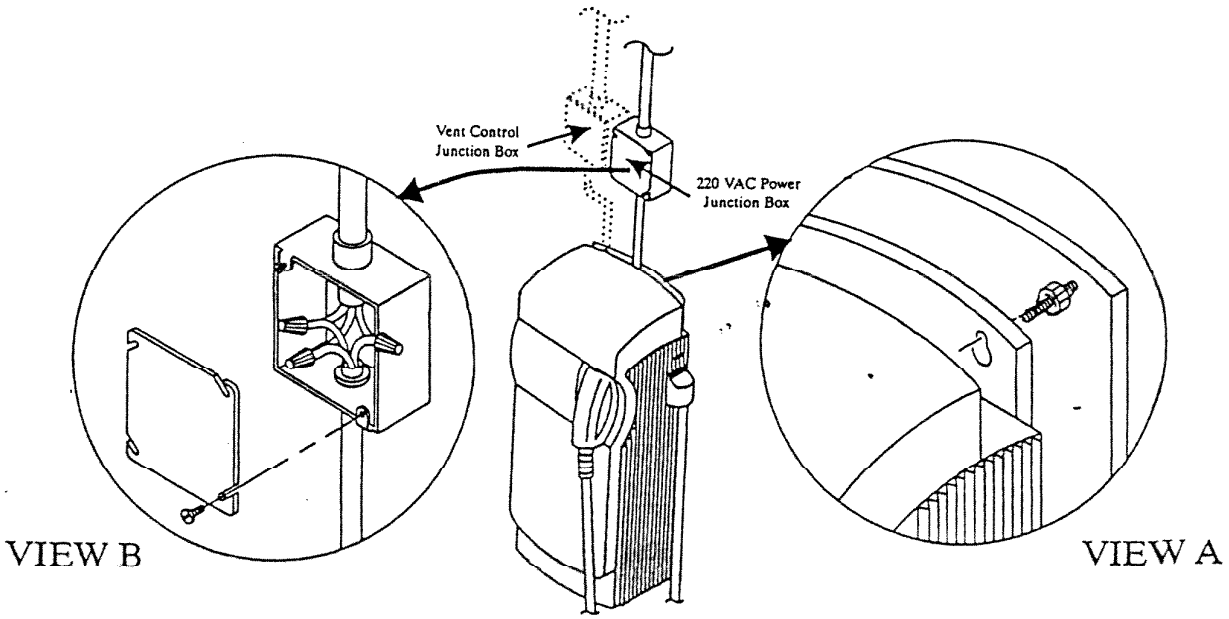
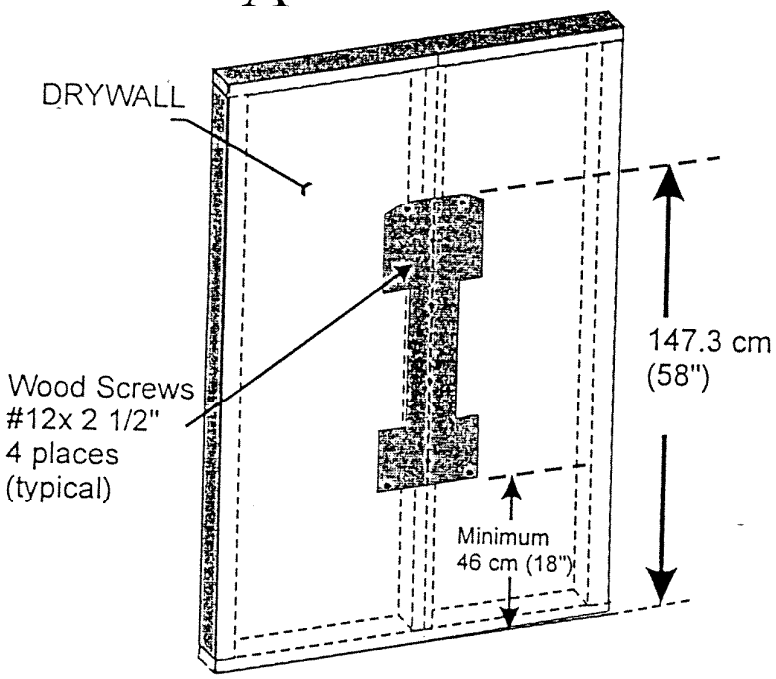


FIGURE 2

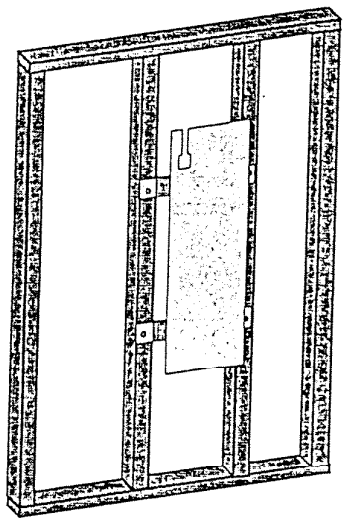
INSTALLATION

A



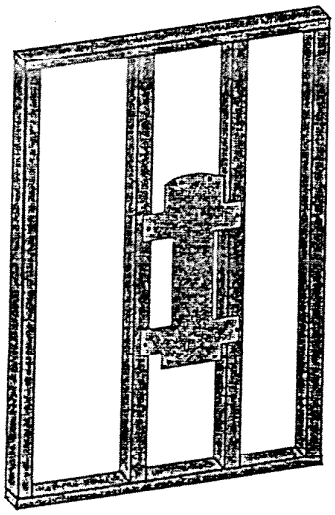
Finished wall
No Ventilation
P/N 16215922

C



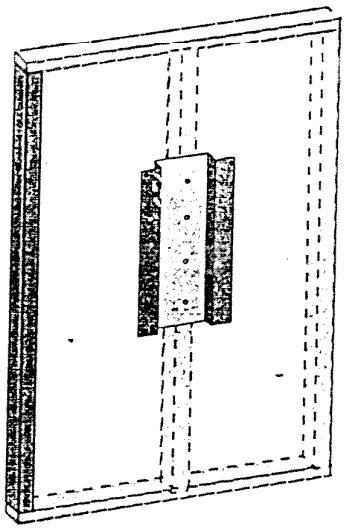
Unfinished wall
With Ventilation
P/N 16246576

B



Unfinished wall
No Ventilation
P/N 16215921

D



Finished wall
With Ventilation
P/N 16266575

Call your local MagneCharge™ Sales and Service Representative for MagneCharge™ Authorized parts.

FIGURE 3

INSTALLATION

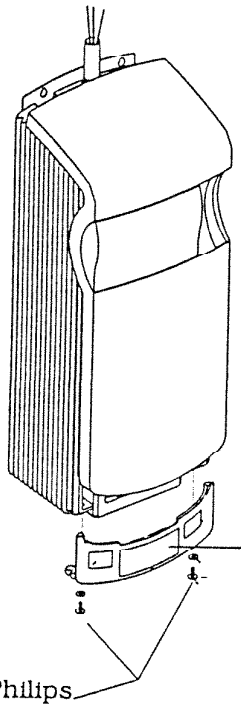


FIGURE 4

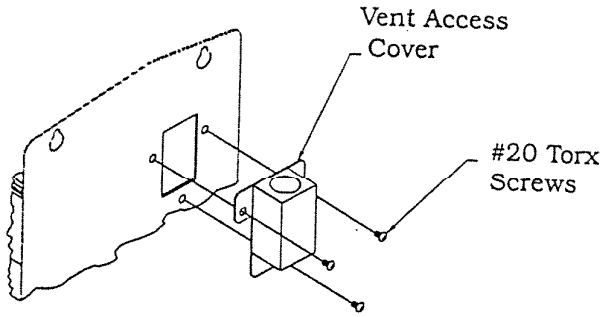


FIGURE 5

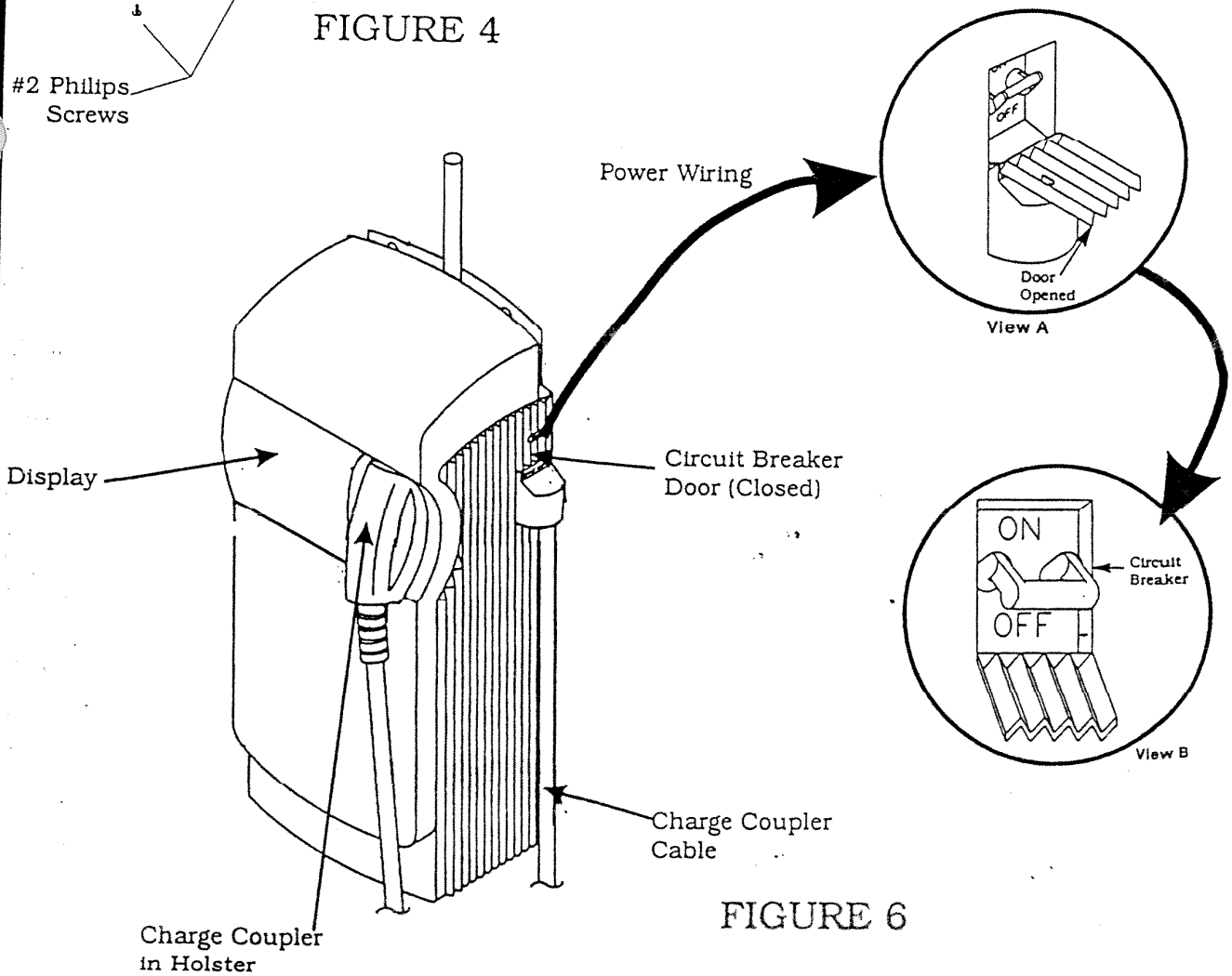
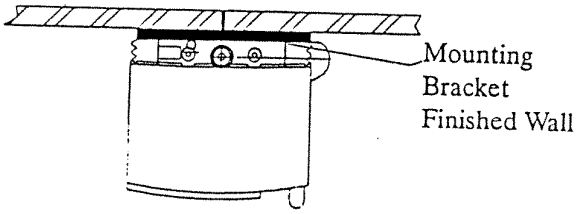


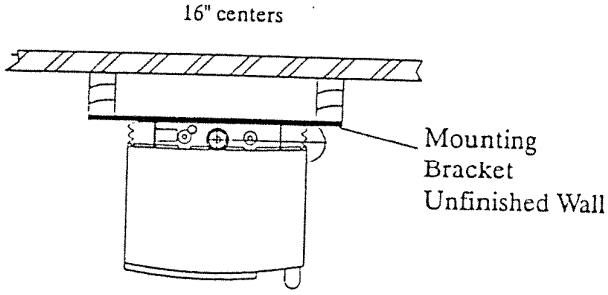
FIGURE 6

INSTALLATION

Bracket Mounting
For No Ventilation Required

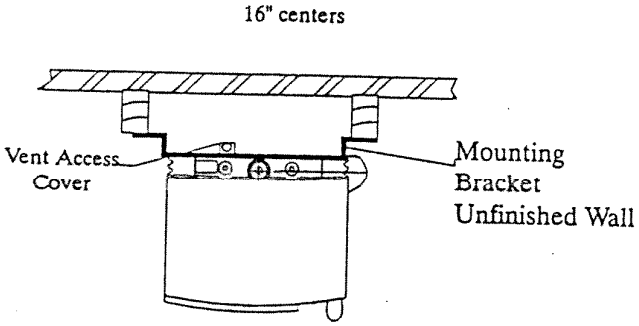


A

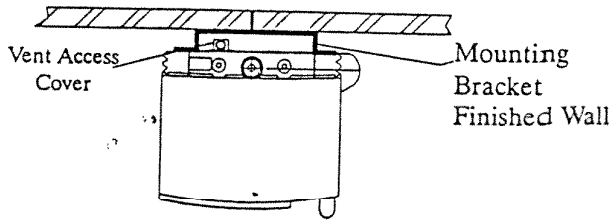


B

Bracket Mounting
For Ventilation Required



C



D

FIGURE 7

INSTALLATION

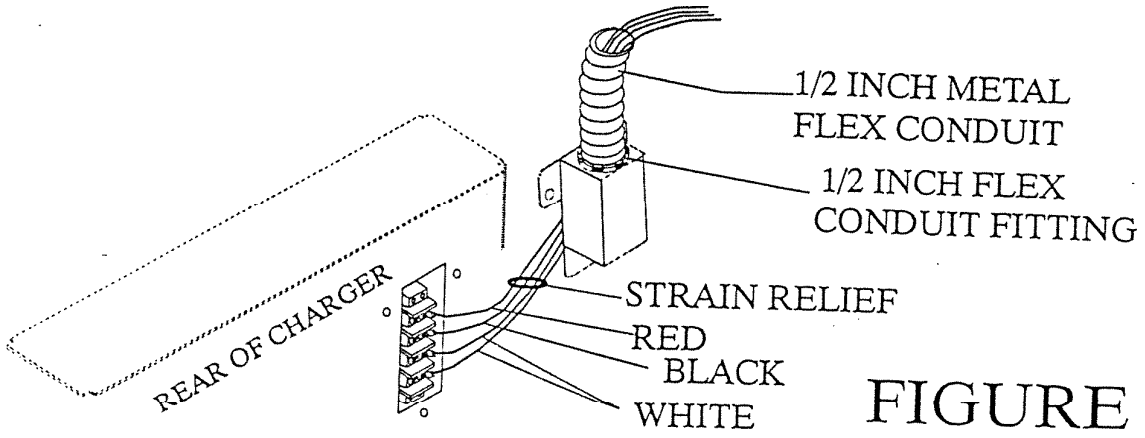
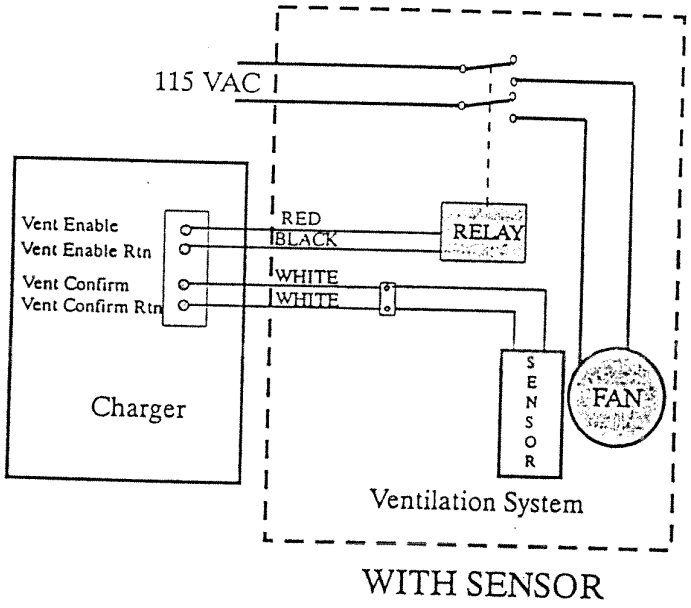
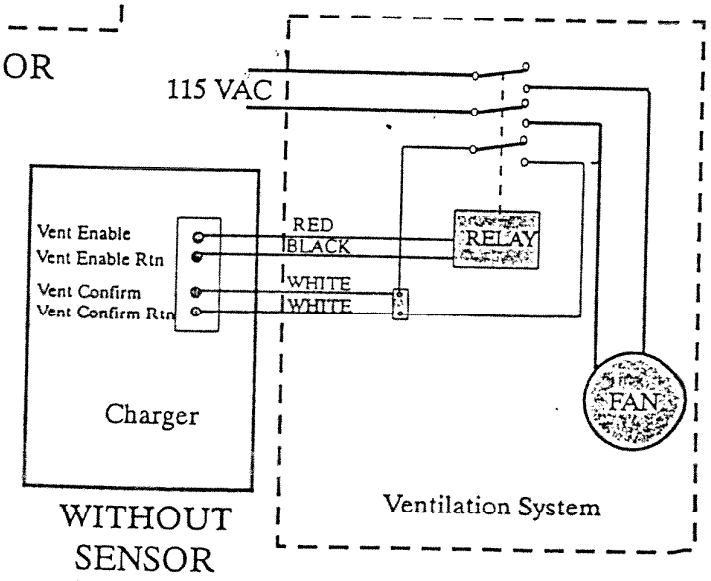


FIGURE 8



WITH SENSOR



WITHOUT SENSOR

FIGURE 9

If you have questions about the installation of this product, contact your MAGNECHARGE™ Sales and Service Representative at

1-800-482-6644

MAGNE CHARGE™

LISTED
EV BATTERY CHARGER
7M60

Power Control Systems, Torrance, CA 90509-2923

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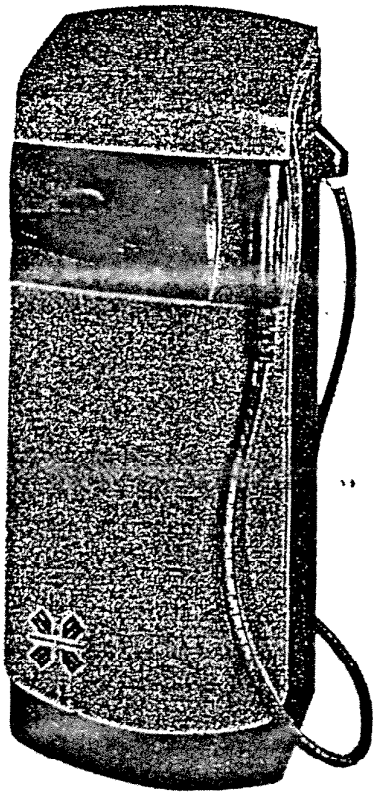
MAGNE CHARGE™

WALL MOUNT CHARGER (WM200) OWNER'S MANUAL



ELECTRIC VEHICLE CHARGER

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS- This manual contains important instructions for the MagneCharge™ Wall Mount Inductive Charger WM200. Carefully read these instructions and the charging instructions in the electric vehicle owner's manual before charging your electric vehicle.

The following symbols may be found in this manual or on labels affixed to the charger:

The exclamation mark within a triangle alerts the user to important operating and maintenance (servicing) instructions.

The lightning bolt with arrowhead within a triangle alerts the user to the presence of dangerous voltages which may constitute a risk of electrical shock.

1. Only use this charger to charge electric vehicles equipped with a MagneCharge™ inductive charge port (inlet). See vehicle owner's manual to determine if vehicle is equipped with a MagneCharge™ inductive charge port.

2. VENTILATION - Some electric vehicles require an external ventilation system to prevent the accumulation of hazardous or explosive gases when charging indoors. Check the vehicle owner's manual to determine if your vehicle requires ventilation during indoor charging. Do not attempt to defeat the ventilation system control mechanisms. If a malfunction of the ventilation system is suspected contact your MagneCharge ™ Sales and Service Representative.

NOTE: This charger will not charge vehicles that require ventilation if the ventilation system has not been installed and properly connected to the charger.

WARNING: If a malfunction of the ventilation system is suspected, DO NOT charge a vehicle that requires ventilation indoors. Contact your MagneCharge™ Sales and Service Representative for service.

3. Do not expose wall mount charger to rain or snow.

4. Do not block the air intake (upper left side) or exhaust (bottom side) vents. Allow 46 cm (18 inches) of clearance on all sides of the unit. Blocking the vents may lead to reduced output power and significantly increase charging time.

5. When removing the charge coupler from vehicle's charge port utilize the handle rather than pulling on the cable.

6. Make sure the charger's output cable is positioned so it will not be stepped on, tripped over, or otherwise subjected to damage or stress.

7. Do not attempt to repair or service the charger yourself. There are no user serviceable parts inside. Contact your MagneCharge™ Sales and Service Representative for service.

8. Do not operate charger with a damaged output cable or coupler. Contact your MagneCharge™ Sales and Service Representative for service immediately.

9. Do not operate charger if it has received a sharp blow or been dropped or otherwise damaged in any way. Contact your MagneCharge™ Sales and Service Representative for service immediately.

10. Turn off input power to charger at the circuit breaker panel before cleaning. Refer to MAINTENANCE section.

INTRODUCTION

Welcome to the new and exciting world of electric vehicles. The MagneCharge™ Wall Mount Inductive Charger WM200 is designed to be mounted on the wall of your garage. The wall mount charger is intended to be the primary charger for your electric vehicle. Refer to your vehicle owner's manual for charging time and additional information. The charging operation is fully automatic and is described in the following section.

OPERATION

The charging procedure is described below. The charger also supports additional functions, such as "delayed charging" which may or may not be supported by your vehicle. Refer to charging instructions in the vehicle owner's manual for your vehicle's specific charging information.

1. Remove the charge coupler from its holster on the charger; display reads "******", then "CONNECT TO VEHICLE".
2. Open the vehicle's charge port access door (refer to vehicle owner's manual).

2. Open the vehicle's charge port access door (refer to vehicle owner's manual).

3. Fully insert the charge coupler into the charge port.

NOTE: When properly inserted, the charge coupler will snap into place with a solid click.

4. Charging begins automatically. The display reads "XX% FULL" alternating with "HOURS /MINUTES TO COMPLETE" indicating battery state of charge.

5. If "FULL LEVELING" appears on the display, the batteries are more than 98% full. The display continues to read "FULL LEVELING" while the battery levels are being "equalized ", once they are "equalized" the display will read "COMPLETE".

6. When the batteries are fully charged; the display reads "FULL COMPLETE"

NOTE: If the display reads "FULL SUPPORT" the vehicle's batteries are fully charged and the charger is supplying power to auxiliary equipment in the vehicle (air-conditioning, heater or defroster).

NOTE: If a fault is detected during charging, the charger will automatically stop charging and display the appropriate fault message on the display (see "TROUBLESHOOTING").

7. In some vehicles it may be possible to lock the charge coupler in the charge port (refer to vehicle owner's manual).

NOTE: The charge coupler can be safely removed from the charge port at any time during charging . The charger will automatically stop charging when the charge coupler is removed.

8. Remove the charge coupler from the charge port. Make sure to firmly secure the charge coupler in its holster.

9. Close the charge port access door or cover on vehicle.

CHARGER DISPLAYS

NOTE: Not all displays may pertain to your vehicle. Refer to your vehicle owner's manual.

	Blank Display - Charger power turned off.
**********	Charger self test running.
CONNECT TO VEHICLE	Charger is operational but has not established communications with the vehicle.
STANDBY	Vehicle has placed the charger in Standby mode.
CHARGING	Charger has established communications and is transfering power to the vehicle.
CHARGING pp%_FULL	Main battery pack State of Charge is between 0-100% and is charging.
CHARGING hhH_mmM TO FILL	Vehicle's estimated time to completion of charging (hh=Hours, mm=Minutes).

NOTE: Display will toggle between the two above diplays during charging indicating % full and time to completion.

FULL LEVELING	Main battery pack has been charged and the charger is now leveling "equalizing" the batteries.

FULL LEVELING hhH_mmM TO_GO	Main battery pack has been charged and the display indicates the length of time to complete leveling.
FULL SUPPORT	Main battery pack is fully charged and the charger is providing power to auxillary equipment in the vehicle.
FULL COMPLETE	Main battery pack is fully charged.
VEHICLE DELAY	Main battery pack is not fully charged and the charger is now in a vehicle requested DELAY mode.
VEHICLE DELAY hhH_mmM TO START	Main battery pack is not fully charged and the charger is now in a vehicle requested DELAY mode of less than 24 hours.

The following displays are fault conditions, refer to the "TROUBLESHOOTING" section for addition information.

CHECK VENT	**FAULT MESSAGE** This vehicle requires an external ventilation during charging and the ventilation system was not ready.
CHECK CHARGER	**FAULT MESSAGE** Charger shutdown due to a fault condition. Contact local MagneCharge™ Sales and Service Representative.
CHECK VEHICLE	**FAULT MESSAGE** Charger shutdown due to a vehicle fault condition. Contact local vehicle Retailer Service Representative.

VENTILATION

Some electric vehicles require ventilation to prevent the accumulation of hazardous or explosive gases when charging indoors. Check the vehicle owner's manual to determine if your vehicle requires ventilation during indoor charging. If ventilation is required, a ventilation system providing at least 197 cubic feet per minute must be installed in the charging area by a qualified electrician in accordance with the 1996 national Electric Code (ANSI/NFPA 70), Article 625, 725.

The MagneCharge™ Wall Mount Charger WM200 is capable of controlling an external ventilation system. See MagneCharge™ Wall Mount Inductive Charger (WM200) Installation Guide for how to connect the charger to an external ventilation system.

NOTE: Connection of the charger to an external ventilation system should only be performed by a qualified electrician. It is recommended that the ventilation system be connected during installation of the charger.

When properly connected to an external ventilation system, the charger will automatically turn on and off the ventilation system as required during charging. (Ventilation requirements are communicated from the vehicle to the charger during charger initialization and throughout the charging process.) If the vehicle requires ventilation and no ventilation has been provided, the charger will not charge the vehicle and "CHECK VENT" will be flashed on the charger display.

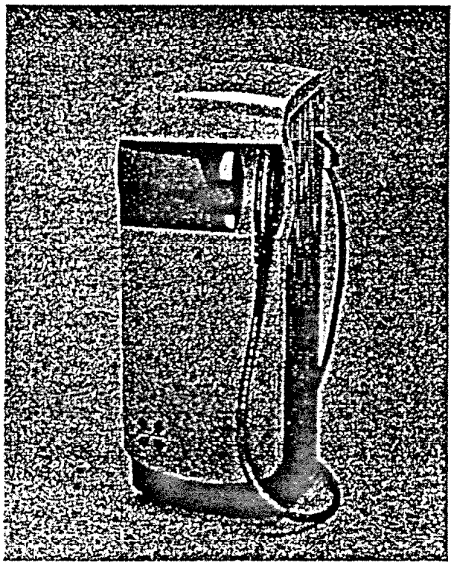
WARNING: Do not attempt to defeat the charger's ventilation controls as this may lead to a hazardous or explosive gas buildup during charging. If a malfunction of the external ventilation system is suspected, do not charge vehicles that require ventilation. Contact a qualified electrician for immediate service of the ventilation system.

MAINTENANCE

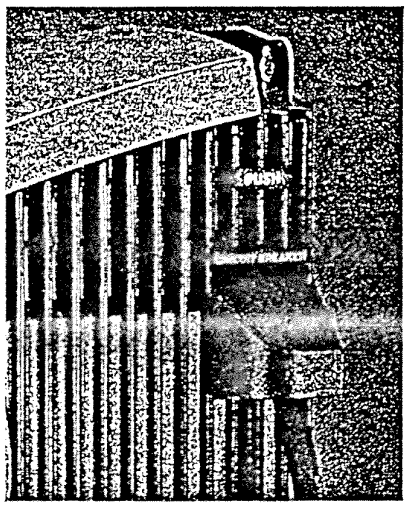
Cleaning:

Turn off the charger at the circuit breaker before cleaning. Clean the charger with a soft cloth lightly moistened with mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene. To reduce the risk of electrical shock or equipment damage, do not allow moisture to enter the charger while cleaning.

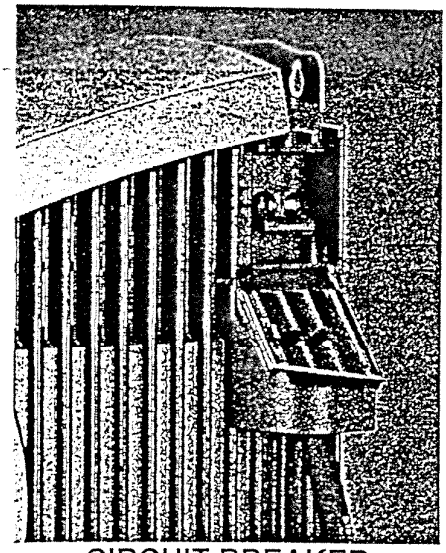
FEATURES



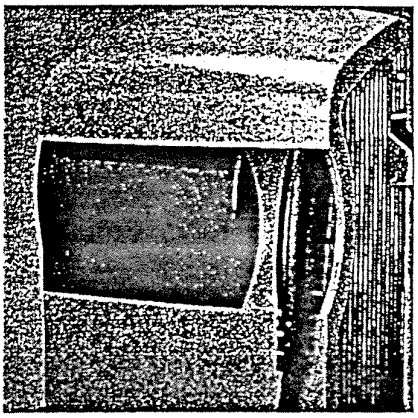
CHARGER



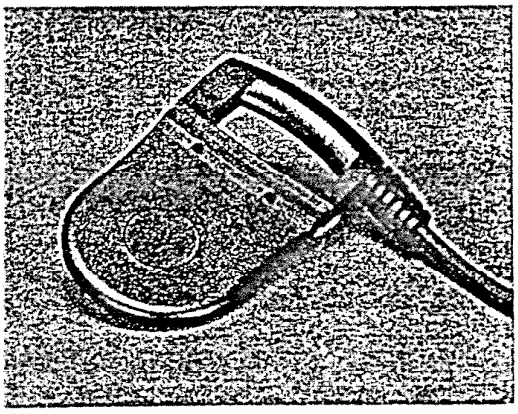
CIRCUIT BREAKER DOOR



CIRCUIT BREAKER



CHARGER DISPLAY



CHARGE COUPLER

TROUBLE SHOOTING

The charger display does not illuminate when the charge coupler is pulled out of its holster.

Indicates the charger is not receiving power .

- Check to see if the charger's ON/OFF circuit breaker has been tripped (see Features section) ;if so, reset circuit breaker.
- Check to see if the circuit breaker at the service panel serving the charger circuit has been tripped; if so, reset circuit breaker.
- If both circuit breakers are engaged properly and condition persists, call your local MagneCharge™ Sales and Service Representative immediately.

The charger display blinks CONNECT TO VEHICLE while the charge coupler is inserted into the vehicle charge port.

Indicates the charger has not established a communication link with the vehicle.

- Make sure the charge coupler has been fully inserted into the charge port.

NOTE: Remember that the charge coupler will snap into place with a solid click

- If the charge coupler is fully inserted and the condition persists, attempt to reset the charger by putting the charge coupler back into its holster; then attempt to charge the vehicle again.
- If this condition still persists, call your local MagneCharge™ Sales and Service Representative immediately.

The charger display continuously blinks CHECK VEHICLE.

Indicates the vehicle has detected a malfunction.

- Refer to the vehicle owner's manual for service contact point.

The charger display blinks CHECK CHARGER.

Indicates the charger has detected an internal malfunction.

- To reset the charger after a fault has been detected, put the charge coupler back into its holster, or turn the Charger circuit breaker off, then on again.
- If this condition still persists, call your local MagneCharge™ Sales and Service Representative.

The charger displays CHECK VENT.

Indicates the vehicle requires external ventilation and charger does not have confirmation that a ventilation system is operational or connected to the charger.

- If the charger is indoors and the ventilation system is not functional, call your local MagneCharge™ Sales and Service Representative immediately.

FLOOR MOUNT CHARGER INSTALLATION GUIDE (FM200)

Before you begin –
Read these instructions completely, including the important safety instructions.

Note to Installer - Be sure to leave these instructions with the consumer.

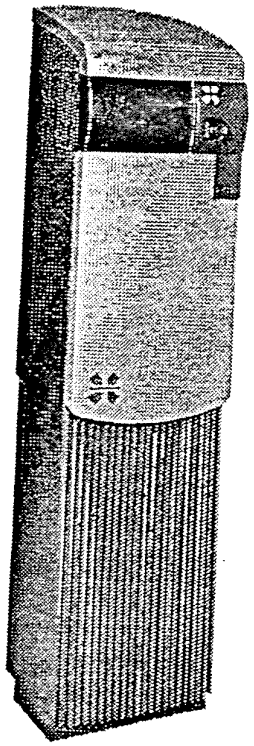
Note to Consumer - Keep these instructions for future reference.

Required Installation Tools and Materials

- Ventilation System (see text)
- Site Preparation (see text)
- Mounting hardware and 14 MM socket
- Common hand tools
- Wire nuts Qty 4 (8-10 AWG)
- Jumper (Outdoor use only)
- TORX PLUS Driver M4

Inventory

- Floor mount (FM200) Owner's Manual
- Floor Mount (FM200) Installation Guide
- Keys Qty 2
- Warranty card
- Floor Mount Charger (FM200)



ELECTRIC VEHICLE CHARGER

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS--

This installation guide contains important instructions that should be followed during installation of the MagneCharge™ Floor Mount Inductive Charger (FM200). **Carefully read these instructions before installing the charger:**

- VENTILATION - This charger contains provisions for control of an external ventilation system (e.g., fan turn on/off) while charging indoors. If ventilation is required during indoor charging, connect an external ventilation system to the charger per instructions contained in the VENTILATION section of these instructions. Improper connection of the ventilation control may lead to hazardous or explosive gas buildup during charging. **Refer to the vehicle Owner's Manual to determine if your vehicle requires a ventilation system while charging indoors. If the vehicle Owner's Manual is unclear or does not address ventilation requirements, contact the service representative where the vehicle was purchased.**
- Disconnect power to the charger branch circuit at the service panel before installation.
- The charger should be installed by a qualified electrician in accordance with all local electrical codes and ordinances and the instructions contained in this Installation Guide.
- Do not install in a location that blocks the air intake (upper left side) or exhaust (middle back) vents. Allow at least 46 cm (18 in) of clearance from any wall or fixture.
- GROUNDING INSTRUCTIONS - The charger should be connected to a grounded, metal, permanent wiring system. An equipment-grounding conductor should be run with circuit conductors and connected to equipment-grounding terminal or lead on the battery charger. Connections to the battery charger should comply with all local codes and ordinances.

The following symbol may be found in this manual or on the labels affixed to the charger.

This symbol alerts the installer to the presence of dangerous voltages that may constitute a risk of electrical shock.

Read all installation requirements and instructions before performing the installation.

Requirements

NOTE: Refer to the vehicle Owner's Manual to determine if the vehicle requires ventilation while charging indoors. If the Owner's Manual is unclear or does not address ventilation requirements for the vehicle then contact the service representative where the vehicle was purchased. For all vehicles that require ventilation systems, refer to the section in this installation guide titled VENTILATION.

1. The charger requires a dedicated branch circuit rated at 208-240 VAC (single phase) with a minimum capacity of 40 amps and an overcurrent protection of 40 amps.

NOTE: Do not install a Ground Fault Circuit Interrupter (GFCI) in the branch circuit. The charger contains a built-in ground fault protection device that may cause nuisance tripping of commercially available GFCIs.

2. The charger weighs approximately 82 kg (180 lbs). This installation is a two-person operation.
3. The installation instructions assume that the installer has prepared a suitable mounting base to accommodate the dimensions outlined in Figure 1, and has provided the proper power inputs and ventilation system wiring if required. See section "SITE PREPARATION" in this installation guide.
4. To meet requirements for handicap access to the charger, the height of the charge coupler should not exceed cm 121 cm (48 in) from the grade for front access. If side access is available, the height of the charge coupler should not exceed 137 cm (54 in) from the grade.
5. The top left side and the middle back of the charger must remain unobstructed for proper air flow. Allow for a minimum of 46 cm (18 in) clearance on all sides.
6. The charger must be mounted within access of the electric vehicle charge port (inlet). Note that the coupler cable minimum useable length is 229 cm (7.5 ft).

INSTALLATION

WARNING: Turn off the circuit breaker at the service or distribution panel supplying the charger before attempting to perform the following steps.

Instructions

NOTE: Do not attempt to remove the coupler from its holster without removing the retraction locking screw (see step 5).

1. Remove the charger from the shipping container.

NOTE: Packing material and shipping container is re-useable do not destroy.

2. Familiarize yourself with the charger (see Figure 2).
3. Remove the six screws securing the kick panels to the bottom of the charger; remove kick panels (see Figure 2).
4. Remove the lower front panel as follows:
   a) Remove the two screws securing the lower front panel to the top front panel.
   b) Working from the bottom up, push in the side tabs of the lower front panel while gently pulling on the panel.
   c) Note the location of the vent control terminal block as shown in Figure 2, View C.
5. Remove the retraction locking screw from the charge coupler retraction mechanism as shown in Figure 2. Retain the screw for future use.
6. Remove the front cover of the junction box.
7. Attach a flexible conduit to the rigid power conduit coming out of the mounting base. The distance from the mounting base surface to the junction box is approximately 25 cm (10 in).

Note: Two following steps require two people to perform.

8. Move the charger to the mounting base.
9. Align the holes of the charger with the studs and electrical conduit, set the charger on the base.

   CAUTION: The charger is not stable until fully secured to base!

10. Place a flat washer, lock washer and nut, in this order, onto a mounting stud.
    a) Hand tighten the nut.
    b) Repeat for each stud (4 times).
    c) Tighten down all nuts with a wrench to (80 lbs-in).

11. Unlock and open the charge coupler door. Depress the red release button to access the circuit breaker(see Figure 2, View A).

12. Set the circuit breaker to the OFF (down) position.

NOTE: If the charger is to be mounted indoors, go to the **VENTILATION** section.

13. If the charger is to be located outdoors, place a jumper between the Vent Confirm and Vent Confirm Rtn terminals (see Figure 2, View C).

NOTE: Construct a jumper using 18 gauge 600 volt, UL Style 1015 wire and two spade lugs.

14. Note the color of the three power feed wires; two black and one green.

15. Two black 10 AWG wires are for input power.

16. One green 10 AWG wire is for equipment ground.

17. Connect the flexible conduit to the junction box (see Figure 2).

18. Connect the wires using wire nuts as shown in Figure 2, View D as follows:

Input power: 208 - 240 VAC

Line 1 (HOT) **BLACK WIRE**

Line 2 (HOT) **BLACK WIRE**

Ground **GREEN WIRE**

NOTE: Supply side wire may be a different gauge wire.

NOTE: Neutral wire is not required or connected. If the neutral wire is present then cap it off with a wire nut.

19. Replace the cover on junction box.

20. Bend all spade lugs to allow installation of front panel.

SYSTEM TEST

21. Turn on the circuit breaker located in the service panel, and set the charger circuit breaker to the ON (up) position.

22. Pull the charge coupler out of its holster. Verify the display reads "*******" and then changes to "CONNECT TO VEHICLE".

NOTE: If display does not illuminate, check all circuit breakers and wiring to the charger and check charger's input voltage.

NOTE: Refer all other problems to MagneCharge™ Sales and Service Representative.

23. Return the charge coupler to the holster.

24. The charger display will go blank.

25. Close and lock charge coupler door.

26. Re-install front panel utilizing the two screws removed in step 4.

27. Re-install kick panels utilizing the six screws removed in step 3.

28. The charger is now ready for use.

SITE CLEAN UP

29. Carefully recover the packing materials for return to distributor.

30. Pick up all debris around the work area and sweep clean.

31. Present the keys to the customer.

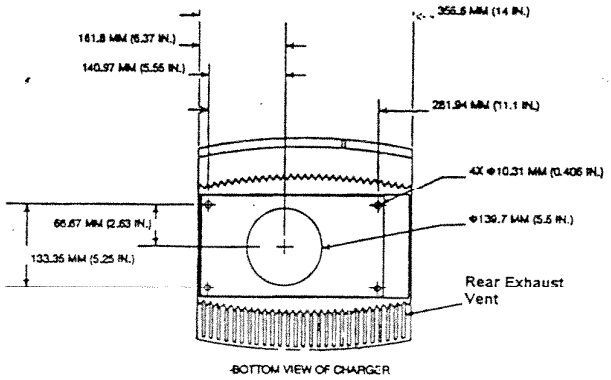

356.6 MM (14 IN.)
161.8 MM (6.37 IN.)
140.97 MM (5.55 IN.)
281.94 MM (11.1 IN.)
4X Φ10.31 MM (0.406 IN.)
66.67 MM (2.63 IN.)
Φ139.7 MM (5.5 IN.)
133.35 MM (5.25 IN.)
Rear Exhaust Vent
BOTTOM VIEW OF CHARGER

Figure 1. Charger Mounting Hole Locations

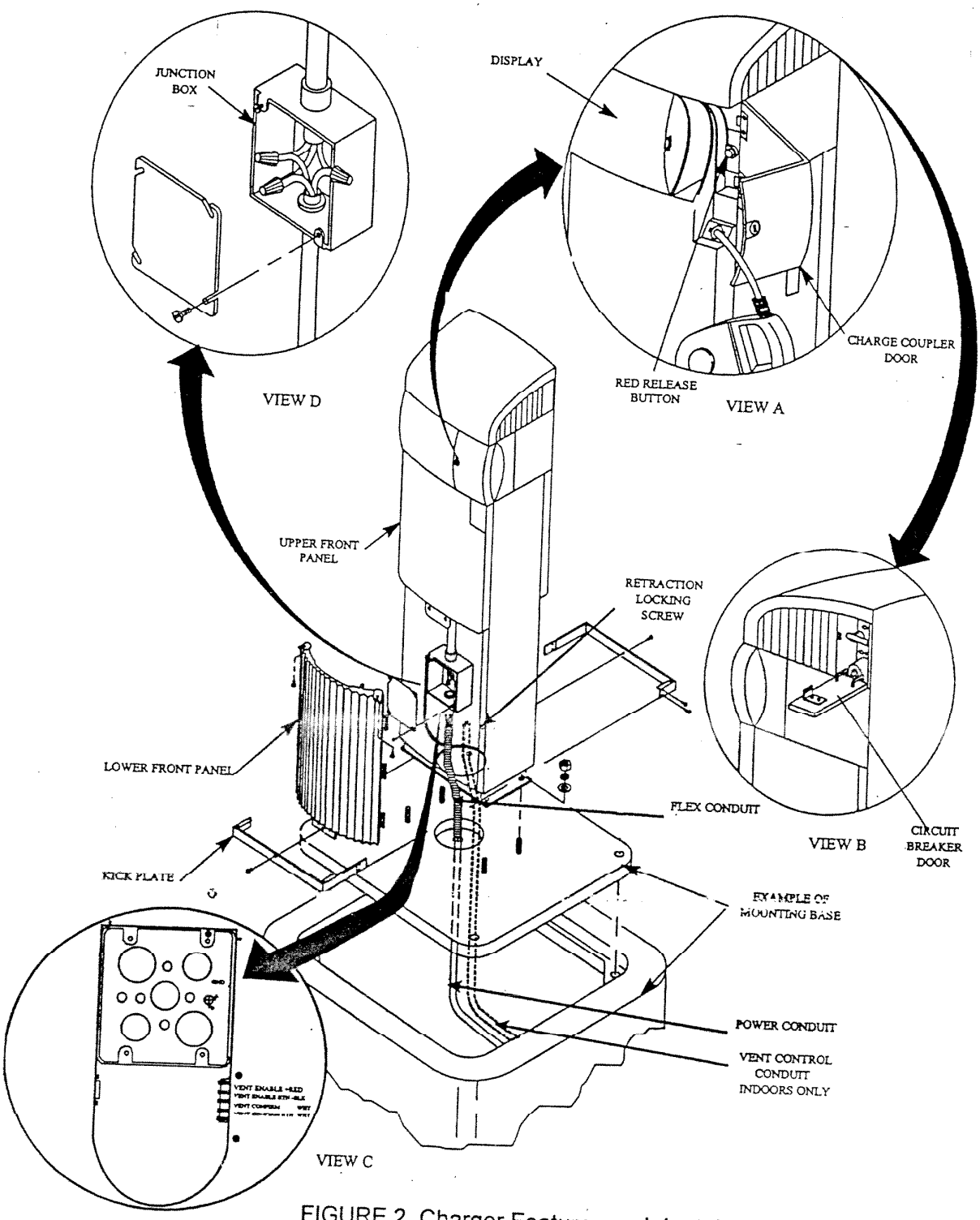


FIGURE 2. Charger Features and Installation Diagram

VENTILATION

NOTE: An external ventilation system may be required to reduce the risk of hazardous or explosive gases building up during indoor charging. Check the vehicle Owner's Manual to determine if the vehicle requires ventilation during indoor charging. If the charger is to be used with a vehicle that requires ventilation during indoor charging, the charger must be connected to a ventilation system that provides at least 197 cubic feet per minute (cfm) air flow during the charging cycle in accordance with the 1996 National Electric Code (ANSI/NFPA 70), Article 625, 725.

WARNING: Turn off the circuit breaker at the service or distribution panel supplying the charger and ventilation before attempting to perform the following steps.

NOTE: Refer to the Ventilation Specifications of SITE PREPARATION section.

1. Note the color of the four vent control wires: one red, one black and two white.
2. One red 18 AWG wire is for Vent Enable.

   One black 18 AWG wire is for Vent Enable Return.
4. Two white 18 AWG wires are for Vent Confirm.
5. Install spade terminal lugs on each wire.

VENT ENABLE (refer to Figure 3)

6. Connect the RED Vent Enable wire to the Vent Enable terminal on the charger.
7. Connect the BLACK Vent Enable Return wire to the Vent Enable Return terminal on the charger.

VENT CONFIRM (refer to Figure 3)

8. Connect the WHITE Vent Confirm wires to Vent Confirm terminals on the charger.

Continue installation with step 14.

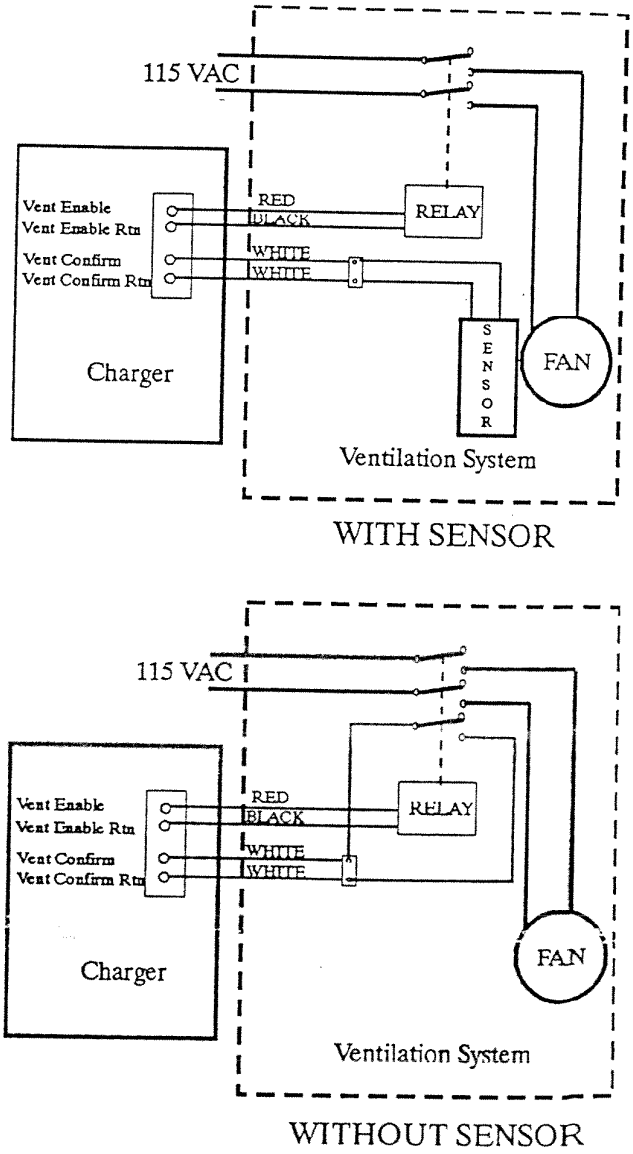


FIGURE 3 Ventilation Wiring Examples

SITE PREPARATION

The following guidelines are presented for site preparation:

POWER SPECIFICATIONS (see Figure 2)

INPUT

Voltage	208-240 VAC, 50/60 HZ
Service Requirement	40 Amp Service

NOTE: Commercial installations may require a neutral wire. Future Pay System will require neutral wire.

NOTE: Route power feed wires through conduit per local codes.

DIMENSIONS

Height	1460 mm (57.5 in.)
Width	356 mm (14.0 in.)
Depth	325 mm (12.8 in.)
Effective Coupler Cable Length	2.28m (7.5 ft)
WEIGHT	82 kg (180 lbs)

VENTILATION SPECIFICATIONS (see Figure 2,3)

Ventilation system that provides at least 197 cubic feet per minute (cfm) air flow during the charging cycle in accordance with the 1996 National Electric Code (ANSI/NFPA 70), Article 625, 725.

A 12 VDC Ventilation Activation Relay (Normally Open) is required to switch the fan supply voltage.

Use 18 gauge 600 volt, UL Style 1015 wire for class one wiring from ventilation system to charger.

NOTE: Route wiring through conduit per local codes.

Vent Enable (Red Wire)

12 VDC, 50 ma (Source)

Vent Enable Rtn (Black Wire)

12 VDC Return (Switched)

NOTE: If the activation relay terminals are not marked positive or negative then polarity is not an issue and the Vent Enable wires may be connected to either terminal without conflict.

Vent Confirm (switch closure) (White Wires)

+5 VDC Switch voltage

COMMUNICATIONS (Optional)

For future pay system installation route a standard telephone line through conduit per local codes.

MOUNTING BASE SPECIFICATIONS

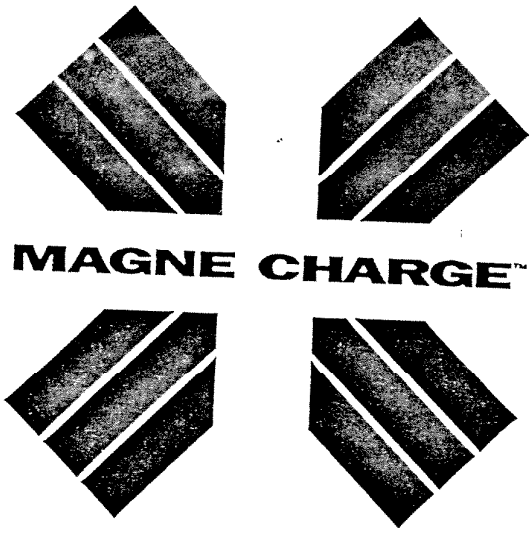
Mounting Stud Size	10 mm (3/8 in.)

NOTE: Mounting stud height above the mounting surface to be 2 to 2.5 cm (3/4 to 1 in).

TBD

If you have questions about the installation of this product, contact your MAGNECHARGE™ Sales and Service Representative at

1-800-482-6644



LISTED

EV BATTERY CHARGER

7M60

Power Control Systems, Torrance, CA
90509-2923

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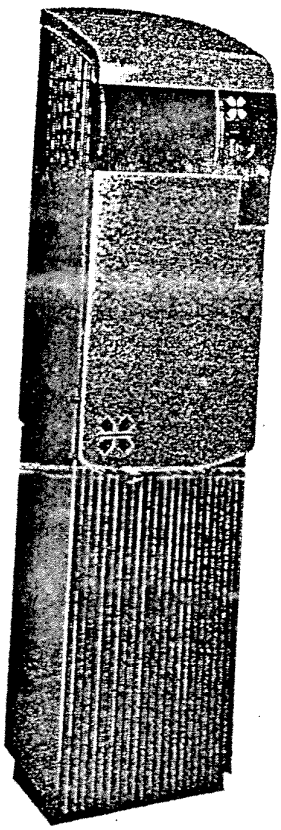
MAGNE CHARGE™

FLOOR MOUNT CHARGER (FM200) OWNER'S MANUAL



ELECTRIC VEHICLE CHARGER

9605

16243352

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS- This manual contains important instructions for the MagneCharge™ Floor Mount Inductive Charger FM200. Carefully read these instructions and the charging instructions in the electric vehicle owner's manual before charging your electric vehicle.

The following symbols may be found in this manual or on labels affixed to the charger:

The exclamation mark within a triangle alerts the user to important operating and maintenance (servicing) instructions.

The lightning bolt with arrowhead within a triangle alerts the user to the presence of dangerous voltages which may constitute a risk of electrical shock.

1. Only use this charger to charge electric vehicles equipped with a MagneCharge™ inductive charge port (inlet). See the vehicle owner's manual to determine if vehicle is equipped with a MagneCharge™ inductive charge port.

2. VENTILATION - Some electric vehicles require an external ventilation system to prevent the accumulation of hazardous or explosive gases when charging indoors. Check the vehicle owner's manual to determine if your vehicle requires ventilation during indoor charging. Do not attempt to defeat ventilation system control mechanisms. If a malfunction of the ventilation system is suspected contact your MagneCharge ™ Sales and Service Representative. If the charger is used outdoors, no ventilation system is required.

NOTE: This charger will not charge vehicles that require ventilation if the ventilation system has not been installed and properly connected to the charger.

WARNING: If a malfunction of the ventilation system is suspected, DO NOT charge a vehicle that requires ventilation indoors. Contact your MagneCharge™ Sale and Service Representative for service

3. Do not block the air intake (upper left side) or exhaust (lower back) vents. Allow 46 cm (18 inches) of clearance on all sides of the unit. Blocking the vents may lead to reduced output power and significantly increase charging time.

4. When removing the charge coupler from vehicle's charge port utilize the handle rather than pulling on the cable.

5. Make sure the charger's output cable is positioned so it will not be stepped on, tripped over, or otherwise subjected to damage or stress.

6. Do not attempt to repair or service the charger yourself. There are no user serviceable parts inside. Contact your local MagneCharge™ Sales and Service Representative.

7. Do not operate charger with a damaged output cable or coupler. Contact your local MagneCharge™ Sales and Service Representative for service immediately.

8. Do not operate charger if it has received a sharp blow or been dropped or otherwise damaged in any way. Contact your local MagneCharge™ Sales and Service Representative for service immediately.

9. Turn off input power to charger at the circuit breaker before cleaning. Refer to MAINTENANCE section.

INTRODUCTION

Welcome to the new and exciting world of electric vehicles. The MagneCharge™ Floor Mount Inductive Charger FM200 is designed to be installed either outdoors or indoors. The floor mount charger is intended to be the primary charger for your electric vehicle. Refer to your vehicle owner's manual for charging times and additional information. The charging operation is fully automatic and is described in the following section.

OPERATION

The charging procedure is described below. The charger also supports additional functions, such as "delayed charging" that may or may not be supported by your vehicle. Refer to charging instructions in the vehicle owner's manual for your vehicle's specific charging information.

1. Unlock the charger door and remove the charge coupler from holster. The charger display reads "*******" then "CONNECT TO VEHICLE".

2. Open the vehicle's charge port access door (refer to vehicle owner's manual).

3. Fully insert the charge coupler into the charge port.

NOTE: When properly inserted, the charge coupler will snap into place with a solid click.

4. Charging begins automatically. The display reads "XX% FULL" alternating with "HOURS /MINUTES TO COMPLETE" indicating battery state of charge.

5. If "FULL LEVELING" appears on the display, the batteries are more than 98% full. The display continues to read "FULL LEVELING" while the battery levels are being "equalized", once they are "equalized" the display will read "COMPLETE".

6. When the batteries are fully charged; the display reads "FULL COMPLETE"

NOTE: If the display reads "FULL SUPPORT" the vehicle's batteries are fully charged and the charger is supplying power to auxiliary equipment in the vehicle (air-conditioning, heater or defroster).

NOTE: If a fault is detected during charging, the charger will automatically stop charging and display the appropriate fault message on the display (see "TROUBLESHOOTING").

7. In some vehicles it may be possible to lock the charge coupler in the charge port (refer to vehicle owner's manual).

NOTE: The charge coupler can be safely removed from the charge port at any time during charging . The charger will automatically stop charging when the charge coupler is removed.

8. Remove the charge coupler from the charge port. Make sure to firmly secure the charge coupler in its holster and lock charger door.

9. Close the charge port access door or cover on vehicle.

CHARGER DISPLAYS

NOTE: Not all displays may pertain to your vehicle. Refer to your vehicle owner's manual.

	Blank Display - Charger power turned off.
**********	Charger self test running.
CONNECT TO VEHICLE	Charger is operational but has not established communications with the vehicle.
STANDBY	Vehicle has placed the charger in Standby mode.
CHARGING	Charger has established communications and is transfering power to the vehicle.
CHARGING pp%_FULL	Main battery pack State of Charge is between 0-100% and is charging.
CHARGING hhH_mmM TO FILL	Vehicle's estimated time to completion of charging (hh=Hours, mm=Minutes).

NOTE: Display will toggle between the two above diplays during charging indicating % full and time to completion.

FULL LEVELING	Main battery pack has been charged and the charger is now leveling "equalizing" the batteries.

FULL LEVELING hhH_mmM TO_GO	Main battery pack has been charged and the display indicates the length of time to complete leveling.
FULL SUPPORT	Main battery pack is fully charged and the charger is providing power to auxillary equipment in the vehicle.
FULL COMPLETE	Main battery pack is fully charged.
VEHICLE DELAY	Main battery pack is not fully charged and the charger is now in a vehicle requested DELAY mode.
VEHICLE DELAY hhH_mmM TO START	Main battery pack is not fully charged and the charger is now in a vehicle requested DELAY mode of less than 24 hours.

The following displays are fault conditions, refer to the "TROUBLESHOOTING" section for additional information.

CHECK VENT	**FAULT MESSAGE** This vehicle requires external ventilation during charging and the ventilation system was not ready.
CHECK CHARGER	**FAULT MESSAGE** Charger shutdown due to a fault condition. Contact local MagneCharge™ Sales and Service Representative.
CHECK VEHICLE	**FAULT MESSAGE** Charger shutdown due to a vehicle fault condition. Contact local vehicle Retailer Service Representative.

VENTILATION

Some electric vehicles require ventilation to prevent the accumulation of hazardous or explosive gases when charging indoors. Check the vehicle owner's manual to determine if your vehicle requires ventilation during indoor charging. If ventilation is required, a ventilation system providing at least 197 cubic feet per minute (cfm) must be installed in the charging area by a qualified electrician in accordance with the 1996 National Electric Code (ANSI/NFPA 70), Article 625, 725.

The MagneCharge™ Floor Mount Inductive Charger is capable of controlling an external ventilation system. See MagneCharge™ Floor Mount Inductive Charger (FM200) Installation Guide for how to connect the charger to an external ventilation system.

NOTE: If your floor mount charger is installed outdoors no ventilation system is required.

NOTE: Connection of the charger to an external ventilation system should only be performed by a qualified electrician. It is recommended that the ventilation system be connected during installation of the charger.

When properly connected to an external ventilation system, the charger will automatically turn on and off the ventilation system as required during charging (ventilation requirements are communicated from the vehicle to the charger during charger initialization and throughout the charging process). If the vehicle requires ventilation and no ventilation has been provided, the charger will not charge the vehicle and "CHECK VENT" will be displayed on the charger display.

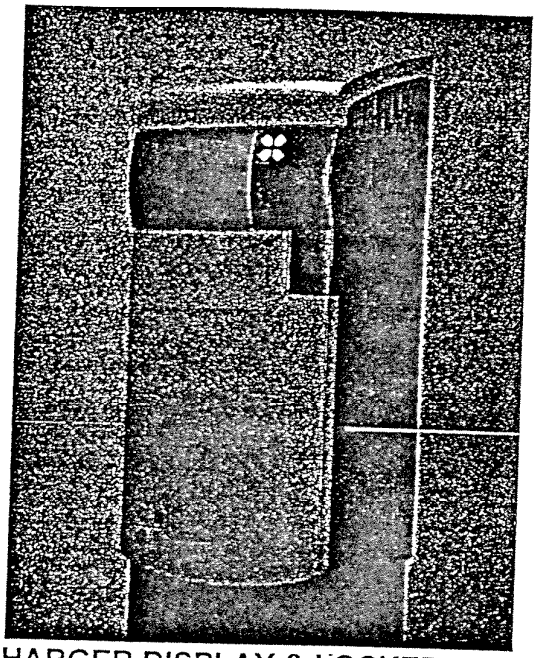
WARNING: Do not attempt to defeat the charger's ventilation controls as this may lead to a hazardous or explosive gas buildup during charging. If a malfunction of the external ventilation system is suspected, do not charge vehicles that require ventilation. Contact a qualified electrician for immediate service of the ventilation system.

MAINTENANCE

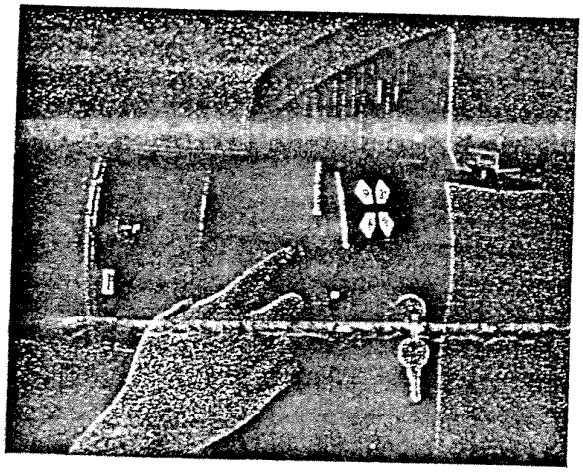
Cleaning:

Turn off the charger at the circuit breaker before cleaning. Clean the charger with a soft cloth lightly moistened with mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene. To reduce the risk of electrical shock or equipment damage, do not allow moisture to enter the charger while cleaning.

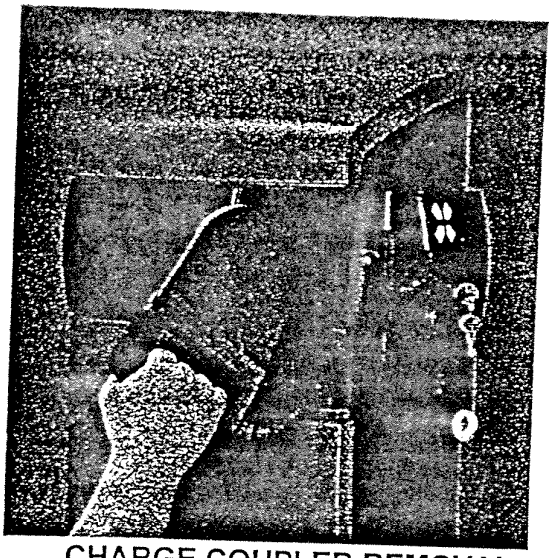
FEATURES



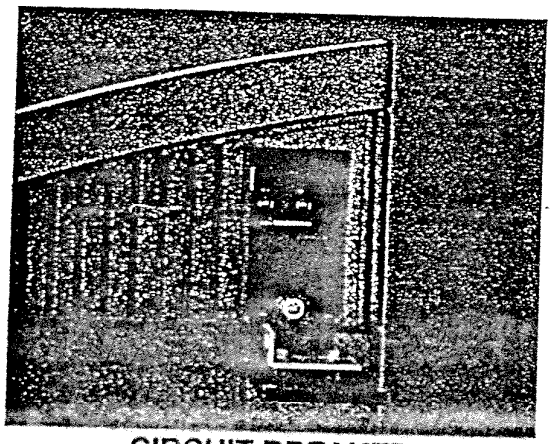
CHARGER DISPLAY & LOCKED DOOR



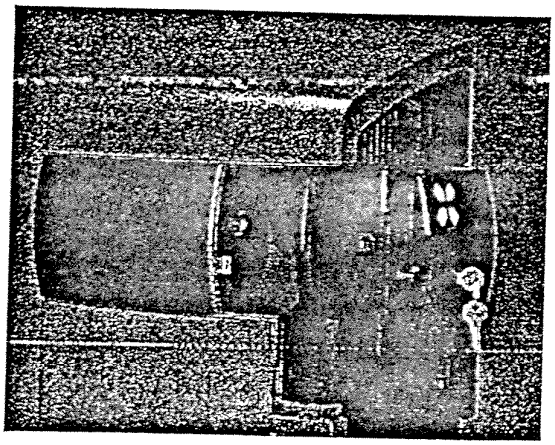
CIRCUIT BREAKER DOOR
AND
RELEASE BUTTON



CHARGE COUPLER REMOVAL



CIRCUIT BREAKER



COUPLER IN HOLSTER

TROUBLESHOOTING

The charger display does not illuminate when the charge coupler is pulled out of its holster.

Indicates the charger is not receiving power.

Check to see if the charger's ON/OFF circuit breaker has been tripped (see Features section); if so, reset circuit breaker.

- Check to see if the circuit breaker at the service panel serving the charger circuit has been tripped; if so, reset circuit breaker.
- If both circuit breakers are engaged properly and condition persists, call your local MagneCharge™ Sales and Service Representative immediately.

The charger display blinks CONNECT TO VEHICLE while the charge coupler is inserted into the vehicle charge port.

Indicates the charger has not established a communication link with the vehicle.

- Make sure the charge coupler has been fully inserted into the charge port.

NOTE: Remember that the charge coupler will snap into place with a solid click

- If the charge coupler is fully inserted and the condition persists, attempt to reset the charger by putting the charge coupler back into its holster; then attempt to charge the vehicle again.
- If this condition still persists, call your local MagneCharge™ Sales and Service Representative immediately.

The charger display continuously blinks CHECK VEHICLE.

Indicates the vehicle has detected a malfunction.

- Refer to the vehicle owner's manual for service contact point.

The charger display blinks CHECK CHARGER.

Indicates the charger has detected an internal malfunction.

- To reset the charger after a fault has been detected, put the charge coupler back into its holster, or turn the Charger circuit breaker off, then on again.
- If this condition still persists, call your local MagneCharge™ Sales and Service Representative.

The charger courtesy light is not lit.

Indicates the charger is not receiving power or the light is burned out.

- Check to see if the charger ON/OFF circuit breaker has tripped (see Features sections); if so, reset circuit breaker.
- Check to see if the circuit breaker at the service panel serving the charger circuit has been tripped; if so, reset circuit breaker.
- If both circuit breakers are engaged properly and the charger operates properly, the light is probably burned out. Call your local MagneCharge™ Sales and Service Representative.

The charger displays CHECK VENT.

Indicates the vehicle requires external ventilation and charger does not have confirmation that a ventilation system is operational or connected to the charger.

- If the charger is indoors and the ventilation system is not functional, call your local MagneCharge™ Sales and Service Representative immediately.
- If the charger is installed outdoors, call your local MagneCharge™ Sales and Service Representative immediately.

CHARGER SPECIFICATIONS

(FM200) FLOOR MOUNT CHARGER:

ITEM	CHARACTERISTIC
INPUT	
Voltage	208 -240 VAC
Current	30 A (MAX.)
Frequency	50/60 HZ
OUTPUT	
Power	6.6 kW (MAX.)
Vent Enable	12v, 50 mA
DIMENSIONS	
Height	1460 mm (57.5 in.)
Width	356 mm (14.0 in.)
Depth	325 mm (12.8 in.)
Charge Coupler Cable Length	2.28 to 2.25 m (7.5 to 8 ft)
WEIGHT	82 kg (180 lbs)
ENVIRONMENT	
Temperature	0° C (32 ° F) to 40 ° C (104 ° F)
Indoor	Yes
Outdoor	Yes

UL®

LISTED
EV BATTERY CHARGER
7M60

FCC INFORMATION

The MagneCharge™ inductive charger operates on a radio frequency subject to Federal Communications Commission (FCC) Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This product has been designed to protect against radio frequency interference (RFI). However there may be some instances when high powered radio signals or nearby RF-producing equipment (such as digital phones, RF communications equipment, etc.) could affect operation.

If interference to the charger is suspected, we suggest the following steps before consulting your dealer for assistance: (1) Try reorienting or relocating nearby electrical appliances or equipment during charging. (2) Turn off nearby electrical appliances or equipment during charging.

Changes or modifications to this product by other than an authorized service facility could void authorization to use this equipment.

MAGNE CHARGE™

1-800-482-6644

Power Control Systems, Torrance, CA
90509-2923

16243352

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WM SCM
TEAR DOWN
PROCEDURES

Teardown Procedures - Wallmount SCM (P/N 16211439):

Plastics Removal

A. Tools Required -

1. #2 Phillips Screwdriver 12" Length
2. Offset #2 Phillips Screwdriver
3. Storage bag (for hardware).

B. Parts List -

1. Valance (P/N 16213392)
2. Front Cover (P/N 16214134)
3. Left Side Panel (P/N 16214882)
4. Right Side Panel (P/N 16214139)
5. Base - Upper Surround (P/N 16214880)
6. Four (4) screws (P/N 92005A428)
7. Six (6) screws (P/N 92005A422)
8. Two (2) screws (P/N 91287A137)
9. Twelve (12) washers (P/N 98017A160)

C. Plastics Removal - Wallmount SCM (P/N 16211439):

Note: When removing plastic pieces, follow each step in sequence,i.e., Valance - first, Front Cover - second, etc. Certain pieces cannot be removed until the preceeding piece has been removed first.

1. Valance (P/N 16213392) -
a) Remove two (2) screws (P/N 92005A428) and two (2) washers (P/N 98017A160) from underneath front plastic Valance.(Refer to Fig. WM 1.3)
b) Pull down on Valance and remove.
c) Notate serial number of charger.

2. Front Cover (P/N 16214134) -
a) Remove coupler assembly from holster.
b) Remove two (2) screws (P/N 92005A422) and two (2) washers (P/N 98017A160) from bottom of front panel. (Refer to Fig. WM 1.2)
c) Remove two (2) screws (P/N 91287A137) and two (2) washers (P/N 98017A160) from the back of top cover panel. (Refer to Fig. WM 1.2)
d) Lift up on panel to remove.

3. Left Side Panel (P/N 16214882) -
a) Remove two (2) screws (P/N 92005A422) and two (2) washers (P/N 98017A160) from the top of the Left Side Panel.
(Refer to Fig. WM 1.4)
b) Push down on panel then pull out from the bottom to remove.

4. Right Side Panel (P/N 16214139) -
   a) Remove two (2) screws (P/N 92005A422) and two (2) washers (P/N 98017A160)from the top of the Right Side Panel. (Refer to Fig. WM 1.4)
   b) Push down on panel then pull out from the bottom to remove.
5. Base - Upper Surround (P/N 16214880) -
   a) Remove two (2) screws (P/N 92005A428) and two (2) washers (P/N 98017A160) from the top of the Upper Surround. (Refer to Fig. WM 1.4.1)
   b) Lift up on Upper Surround to remove.
6. When replacing plastics, install pieces in reverse order, i.e., Upper Surround - first, Right (or Left) Side Panel - second, etc.

Note: Torque Specification for screws on all panels is 40-50 lb.-in.

Teardown Procedures - Wallmount SCM (P/N 16211439):

Replacing Damaged Plastics

A. Tools Required -

1. #2 Phillips Screwdriver - Standard and 12" Length
2. Offset #2 Phillips Screwdriver
3. #20 Torx bit
4. Torx Driver

B. Parts List -

1. Valance (P/N 16213392)
2. Front Cover (P/N 16214134)
3. Left Side Panel (P/N 16214882)
4. Right Side Panel (P/N 16214139)
5. Base - Upper Surround (P/N 16214880)
6. Filter - Display, WM (P/N 16214881)
7. Door - Circuit Breaker (P/N 16214143)
8. Pocket - Coupler (Holster) (P/N 16214142)
9. Catch (P/N E4-10-101-10)
10. Four (4) screws (P/N 92005A428)
11. Six (6) screws (P/N 92005A422)
12. Two (2) screws (P/N 91287A137)
13. Twelve (12) washers (P/N 98017A160)
14. Four (4) screws (P/N 16213583)
15. Three (3) screws (P/N 16212431)

C. Plastics subassemblies Replacement

1. For steps on how to remove plastic pieces 1 through 5 in the above Parts List, refer to "Plastics Removal" procedures.
2. To replace Filter - Display (P/N 16214881), remove Front Cover (P/N 16214134).
   a) Remove four (4) screws (P/N 16213583), from top and bottom of Filter - Display, WM (P/N 16214881).
   (Refer to Fig. WM 1.6)
   b) Remove filter and replace with new piece
   c) Replace screws and tighten.
3. To replace Circuit Breaker Door (P/N 16214143), remove Right Side Panel (P/N 16214139).
   a) From corrugated side, open door, push in two (2) side tabs, then push door through panel.
   (Refer to Fig. WM 1.5)
   b) Replace with new door by sliding door through panel (from the smooth side) and then pushing on door until the side tabs snap into place.

4. To remove the Pocket - Coupler (holster) (P/N 16214142):
   a) Using a #20 Torx bit and 1/4" driver, remove three screws (P/N 16212431) from the back of the right side panel.
   b) Lift up on holster to remove.
   c) Re-attach the holster by placing new piece on right side panel and replacing the three Torx screws, torquing screws to 10-14 in.-lbs.
5. To replace door catch (P/N E4-10-101-10):
   a) From the back of the panel, locate catch and press down on the top and bottom tabs.
   (Refer to Fig. WM 1.6)
   b) Push catch through the panel to remove.
   c) Push new catch through the panel (from the front)to replace.
   The catch assembly has a cutout "dot" on one side, place the dot so that it is at the top, when the catch is installed.

Replacing Pigtail (Cable Assembly - Three Conductor, Input Power), Conduit and Fitting

A. Tools Required -

1. #2 Phillips Screwdriver
2. #1 Phillips Screwdriver
3. 1/4" Standard Screwdriver (Stubby)
4. 12" Adjustable Wrenches
5. T20 Torx
6. 7mm nutdriver

B. Parts List -

1. Chassis Inner Top (P/N 16214006)
2. Cable Assembly - Three Conductor, Input Power (P/N 16214087)
3. Screws (P/N 16198864)
4. Fitting (P/N LT50P)
5. Conduit (P/N LTC050)

C. Pigtail Removal (P/N 16214087) -

1. Remove Base - Upper Surround (refer to "Plastics Removal Procedures").
2. Remove two (2) screws (P/N 16198864) from Chassis Inner Top and lift up. (Refer to Fig. PEU 1.8, PEU 1.9.2)
3. Loosen circuit breaker by pressing the plastic tabs on the top of the breaker and pull it away from the main chassis.
4. Remove two (2) screws from the top of the circuit breaker.
5. Remove Green Groundwire.
5. Remove pigtail and install new pigtail (P/N 16214087).
6. Re-connect to circuit breaker.
7. Route wires through opening in Chassis - Inner Top and through conduit; tighten screws to 6-8 in.-lbs.

D. Conduit Removal (P/N LTC050):

1. After removing plastics, locate conduit fitting (P/N LT50P) mounted in the middle of the Inner Chassis Top. (Refer to Fig. PEU 1.8)
2. Using two sets of adjustable wrenches, hold the base of the fitting steady and loosen top plastic piece.
3. Continue to loosen piece by hand and remove.
4. Pull conduit up and away from fitting and pull wires through to remove.

E. Replacing Conduit:

1. Remove top piece of pipe fitting.
2. Route wires through conduit and place end of conduit into fitting.
3. Replace top piece of fitting back over conduit and hand tighten with adjustable wrenches.

F. Removing and Replacing Pipe Fitting (P/N LT50P):

1 Locate the lock nut underneath the Chassis Inner Top,
(Refer to Fig. PEU 1.8)

2. Using two adjustable wrenches, remove the locknut and pull fitting away from top and route wires through fitting to remove.

3. To replace Fitting:

a) Route locknut back over Pigtail wires

b) Route wires through chassis top and new fitting

c) Tighten locknut back onto new fitting, 50-60 in.-lbs.

Teardown Procedures - Wallmount SCM (P/N 16211439):

Replacing the Circuit Breaker

A. Tools Required -

1. #2 Phillips Screwdriver
2. #1 Phillips Screwdriver
3. 1/4" Standard Screwdriver (Stubby)
4. Torque Screwdriver

B. Parts List -

1. Chassis Inner Top (P/N 16214006)
2. Cable Assembly - Three Conductor, Input Power (P/N 16214087)
3. Screws (P/N 16198864)
4. Circuit Breaker - Airpax (P/N IEGHS62-27672-1-V)

C. Replacing Circuit Breaker (P/N IEGHS62-27672-1-V)

1. Refer to first four (4) steps of "Removing Pigtail" Procedure.
2. Remove wires coming from Refer EMI assembly to the bottom of circuit breaker. (Refer to Fig. PEU 1.9.5, View D-D)
3. Remove circuit breaker and replace with new one. Refer to Figure PEU 1.9.5, View D-D for correct wiring instructions.
4. Torque screws to 8-9 in.-lbs.
5. Push breaker back through opening in main chassis and ensure tabs lock into place.

Teardown Procedures - Wallmount SCM (P/N 16211439):

Replacing EMI Gasket -

A. Tools Required -

1. #2 phillips Screwdriver
2. X-acto Knife

B. Parts List -

1. Gasket - EMI (P/N 8408-9143-56)

C. Replacing EMI Gasket (P/N 8408-9143-56)

1. Examine gasket material for any damage.
2. To remove damaged material, use an X-acto knife and cut the area to be changed.
3. Use the knife to lift up one end of the damaged piece and pull up and away from chassis.
4. Clean any residual adhesive with alcohol.
5. Measure and cut a length of gasket material equal to the size of the damaged piece.
6. Remove paper backing and apply to area.
7. Re-assemble.

Teardown Procedures - Wallmount SCM (P/N 16211439):

Removing and Replacing the Fan

A. Tools Required -

1. #2 Phillips Screwdriver
2. 3mm Allen 'T' handle

B. Parts List -

1. Twelve (12) screws (P/N IT41213C)
2. Gasket - EMI (P/N 8408-9143-56) - As Required.
3. Cover - Fan (P/N 16216450)
4. Fan - Comair (P/N 20172
5. Cable - Fan (P/N 16214086)
6. Four (4) Screws (P/N 91290A176)
7. Four (4) Washers (P/N FW040100)
8. Four (4) Lock washers (P/N 91106A124)

C. Replacing the Fan (P/N 20172)

1. Remove twelve (12) screws (P/N IT41213C) from Cover - Fan (P/N 16216450). (Refer to Fig. PEU 1.9.5)
2. Disconnect Cable - Fan connector at fan terminals.
3. Remove Cover and remove four (4) screws (P/N 91290A176), washers (P/N FW040100) and lock washers (P/N 91106A124) from fan.
4. Remove old fan and replace with new one (P/N 21072).
5. Re-install Cable - Fan connector to fan terminals.
6. Replace four screws, washers and lock washers. Torque to 6-8 in.-lbs.
7. Re-install Cover - Fan. Replace any damaged Gasket material before re-installing cover. Torque screws to 6-8 in.-lbs.

Teardown Procedures - Wallmount SCM (P/N 16211439):

Cleaning - Wallmount SCM

A. Suggested Cleaning Supplies:

1. Housecleaner (409, Fantastik, etc) - for cleaning plastics.
2. Protectant (Son Of A Gun, Armorall, etc)
3. Shop-type rags or Paper towels

Cleaning the Wallmount-SCM -

1. Use the cleaner to remove any dirt accumulation on the outside
2. Use the protectant after cleaning.

Note: Avoid getting protectant on Coupler Assembly handle.

FM SCM
TEAR DOWN
PROCEDURES

Teardown Procedures - Floormount SCM (P/N 16214149):

I. Tools Required for Teardown -

1. #2 Phillips Screwdriver 12" Length
2. #1 Phillips Screwdriver 6" Length
3. 3mm Allen head tool.
4. T-20 Torx Driver
5. Permanent Marker
6. Storage bag (for hardware)
7. Retaining Ring pliers

II. Parts List -

1. Kick Skirt (P/N 16214884)
2. Top Cover (P/N A16214153)
3. Circuit Breaker Door (P/N A16214181)
4. Left Side Panel (P/N 16214168)
5. Right Side Panel (P/N 16214171)
6. Front Cover (P/N A16217935)
7. Rear Cover (P/N C16217831)
8. Bottom Front Cover (P/N A16214195)
9. Bottom Rear Cover (P/N A16214193)
10. (6) Hexhead screws (P/N 1T41023C)
11. (12) TPAN HD MS Screws (P/N 92005A422)
12. (1) TORX FLAT HD Screw (P/N 16198870)
13. (1) TPAN HD Screw (P/N FL4102MS)
14. (14) TPH TT Screw (P/N 16212428)

Note: Turn off source power to Floormount before commencing this procedure.
Store all plastic pieces together (along with removed hardware).
This will ensure the correct plastics go back on the same charger.

III. Plastics Removal Procedure SCM (P/N 16214149):

A) Kick Skirt (P/N 16213392)
1) Remove six (6) Hexhead screws (P/N 1T41023C) located at the bottom of the Floormount. (Refer to Figure FM 1.1 & FM 1. 2)
2) Remove Kick Skirt from around the Floormount base.

B) Bottom Front Cover (P/N A16214195)
1) Remove two (2) screws (P/N 92005A422) from the top of the Bottom Front panel. (Refer to Figure FM 1. 4)
2) Slide the panel downward to remove.
3) If necessary remove Mounting Bracket (P/N 16214170) by removing two Phillips head screws.
4) Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

C) Bottom Rear Cover (P/N A16214193)

1) Remove two (2) screws (P/N 92005A422) from the top of the Bottom Rear panel. (Refer to Figure FM 1. 5)
2) Slide the panel downward to remove.
3) If necessary remove Mounting Bracket (P/N 16214170) by removing two Phillips head screws.
4) Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

D) Front Cover (P/N A16217935)

1) Remove two (2) screws (P/N 92005A422) from bottom of the Front cover. After opening the Coupler door,remove one (1) screw from the lower right side of the coupler paddle opening. Remove one (1) screw from the upper inside right of the coupler paddle opening.
(Refer to Fig. Fm 1.6, FM 1.7, FM 1.6.1)
2) Lift up on Front cover and remove.
3) If necessary remove Top Cover (P/N 1624153) and Top Cover rear Mounting Bracket (P/N 1624163) by removing four Phillips head screws. Remove the Front Cover Mounting Bracket (P/N 16214170) by removing two Phillips head screws.
4) Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

E) Top Rear Cover (P/N C16217831)

1) Remove two (2) screws (P/N 92005A422) from bottom of the Top Rear cover. (Refer to Fig. Fm 1.8)
2) Lift up on Top Rear cover and remove. The circuit breaker door on the Right Side Panel will now come out.
3) If necessary remove Mounting Bracket (P/N 16214170) by removing two Phillips head screws.
4) Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

F) Left Side Panel (P/N 16214168)

1) Remove two (2) screws (P/N 92005A422) from the top of the Left Side Panel. (Refer to Figure FM 1.8)
2) Lift up on panel to remove.
3) If necessary remove (2) Mounting Brackets (P/N 16214170) by removing four Phillips head screws.
4) Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

G) Right Side Panel (P/N 16214171)

1) Remove Paddle from the holster.

2) Remove two (2) screws (P/N 92005A422) from the top of the Right Side Panel. (Refer to Figure FM 1.9, 1.9.1)

3) Lift up on panel to remove.

4) If necessary remove Mounting Bracket (P/N 16214173) by removing two Phillips head screws.

5) Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics. Orient the Mounting Bracket correctly.

To replace Right Side Panel components reference section C. 'Plastics replacement' step 3.

IV. PEU Removal from Floormount Frame/Chassis:

Perform section III. 'Plastics Removal Procedure' to access the retraction assy.

A) Coupler Cable Extraction:

1) Remove five (5) screws (P/N 16212428) from Retraction cover (P/N 16217830). Remove cover.
2) Remove Shoulder Screw (P/N 162307960) from the Pulley Wheel assembly of Output Cable on Paddle end .
(Refer to Figure FM 2.1)
3) Remove Clamp Screw (P/N 16198864).
4) Carefully disengage Output Cable from Retraction assy pulleys.

B) Power Cable removal and Vent Control Cable/RS-232 Cable disconnect:

1) Remove four (4) Screws (P/N) from the AC Junction Box Cover Plate. Disconnect the three AC Power lines from the Source power.
2) Loosen Cable Feed thru hole Clamp at the top of the AC Junction Box.
3) Remove three (3) Nuts (P/N 16148279), from the cable retaining clamps, on the left side of the SCM Frame ASM.
Starting at the AC Junction Box, carefully reroute the AC Power Lines (two black, one green), out from the chassis, and back through the three clamps.
4) Locate the Vent Control Terminal at the top rear of the SCM. Loosen the four terminal lugs and remove the Vent control wires.
5) Locate the RS-232 connector at the top of the PEU. Loosen the two Phillips head screws, and remove the connector.

C) PEU Removal:

1) Loosen two (2) Screws (P/N 16222985) (do not remove screws) located at the rear top of the PEU, and Remove two(2) located at the rear bottom of the PEU.
(Refer to Fig. FM 3.1)
2) Carefully lift the PEU up, forward and out of the chassis.
CAUTION: This is a two person operation.

F) PEU Replacement:

CAUTION: This is a two person operation.
1) Carefully lift the PEU up and lower it into the chassis.
2) Tighten two (2) Screws (P/N 16222985) located at the rear top of the PEU, and Insert two(2) located at the rear bottom of the PEU.

G) Power Cable installation and Vent Control Cable/RS-232 Cable re-connect:

1) Starting at the AC Junction Box, carefully reroute the AC Power Lines (two black, one green), out from the chassis, and back through the three clamps.
2) Tighten three (3) Nuts (P/N 16148279), to the cable retaining clamps, on the left side of the SCM Frame ASM.
3) tighten Cable Feed thru hole Clamp at the top of the AC Junction Box.
4) Tighten four (4) Screws of the AC Junction Box Cover Plate.
5) Locate the Vent Control Terminal at the top rear of the SCM. Re-connect the Vent control wires and tighten the four terminal lugs.
6) Locate the RS-232 connector at the top of the PEU. Re-connect the connector and tighten the two Phillips head screws.

H) Paddle Cable Insertion:
1) Remove Cover - Retraction, from Frame ASM.
(Refer to Fig. 2.1)
2) Starting from the right side of the retraction assembly, route the cable CW around the bottom outer wheel.

Note: Lift the Double Wheel Assy. to facilitate routing the cable around the bottom pulleys.

3) Continue routing the cable CW around the top wheel.
4) Continuing CW, Thread the Coupler Paddle between the cable and the chassis to facilitate routing the cable around the bottom inner wheel.
5) Pull Coupler Paddle up and install Pulley Wheel (Part of Coupler Paddle ASM).
6) Install the Wheel - Pivot, Bearing, and Shoulder Screw.
7) Install Cover - Retraction back onto Frame ASM.

V. Retraction Assy Removal and Replacement

A. Tools Required -

1. Retaining Ring Pliers
2. #2 Phillips Screwdriver
3. 8" Crescent Wrench

B. Parts List -

1. (4) Bumper , Rubber (P/N 16222553)
2. (4) Screw, M3 x 8 (P/N 16200582)
3. (1) Washer, Large,Teflon (P/N 16223016)
4. (2) Washer, Lock, M8 (P/N 16223014)
5. (2) Washer, Flat, M8 (P/N 11508788)
6. (1) Screw, Shoulder, M5 (P/N 16222995)
7. (1) Spacer, Round (P/N 16223556)
8. (1) Ring, Retaining (P/N 16229425)
9. (1) Washer (P/N 16223017)
10. (1) Sleeve Bearing (P/N 16228426)
11. (2) Screw, Hex HD, M8x12 (P/N 11500914)
12. (5) Screw, Pan HD, M4x6 (P/N 16212428)
13. (1) Shaft, DBL Retraction (P/N 16219134)
14. (1) Cover - Retraction (P/N 16217830)
15. (1) Mech ASM - DBL Wheel (P/N 16219132)
16. (1) Wheel - Top Retraction (P/N 16217931)

C. Retraction Assembly Removal
(Refer to DWG 16214197 and FIG. FM 2.1)

A.) Perform section III the "Plastics Removal" Procedure.
B.) Paddle Cable Extraction:

1) Remove five (5) screws (P/N 16212428) from Retraction cover (P/N 16217830). Remove cover.
2) Remove Shoulder Screw (P/N 16222995) from the Pulley Wheel assembly of Output Cable on Paddle end.
3) Remove Clamp Screw (P/N 16198864).
4) Carefully disengage Output Cable from Retraction assy pulleys.

C) Retraction Assy - Top Wheel Replacement:

1) Remove Retaining Ring (P/N 16229425) on Top Wheel (P/N 16217931).
2) Remove Wheel, Washer (P/N 16223017), Sleeve Bearing (P/N 16228426) , and Washer, Large, Teflon (P/N 16223016) .
3) Replace Wheel, Washer (P/N 16223017), Sleeve Bearing (P/N 16228426) , and Washer, Large, Teflon (P/N 16223016) .

D) Double Wheel Assy (P/N 162191132) and Shaft Replacement (P/N 162191134):
1) Remove (2) bolts (P/N 11500914), remove DBL retraction shaft.
If necessary, replace Shaft and re-assemble Retraction assy.
2) Remove (1) DBL Wheel Mechanical Assy. Replace or Repair Assy as required.

This section is for sub-components replacement of the DBL Wheel Mech Assy:
2a. Remove (2) Linear Retraction Bearings (P/N 16231361). Press in replacement parts. Re-install assy on shaft and re-assemble Retraction assy.
(The following steps do not require the DBL Wheel Mech Assy. to be removed from the Retraction Shaft.)
2b. Remove Stem Bumpers (P/N 16228440), install new components.
2c. Remove Retaining Ring (P/N 16223555), Remove Teflon washer (P/N 16223017), Bottom Inner and Outer Retraction Wheels, and (2) Teflon washers (P/N 16223016).
Replace Sleeve Bearing by pressing it into the appropriate wheel.
Use Sleeve Bearing (P/N 16228426) for the Inner Wheel.
Use Sleeve Bearing (P/N 16228427) for the Outer Wheel.
Re-install assy on shaft and re-assemble Retraction assy.

E) Paddle Cable Replacement
1) Remove Cover - Retraction, from Frame ASM.
(Refer to Fig. 2.1)
2) Starting from the right side of the retraction assembly, route the cable CW around the bottom outer wheel.
Note: Lift the Double Wheel Assy. to facilitate routing the cable around the bottom pulleys.
3) Continue routing the cable CW around the top wheel.
4) Continuing CW, thread the Coupler Paddle between the cable and the chassis to facilitate routing the cable around the bottom inner wheel.
5) Pull Coupler Paddle up and install Pulley Wheel (Part of Coupler Paddle ASM).
6) Install the Wheel - Pivot (P/N A16214147), Bearing (P/N 7C55MPS1906), and Shoulder Screw (P/N 16222995).
7) Install Cover - Retraction back onto Frame ASM.

Replacing Damaged Plastics

A. Tools Required -

1. #2 Phillips Screwdriver - Standard and 12" Length
2. Offset #2 Phillips Screwdriver
3. #20 Torx bit
4. Torx Driver
5. 3mm Allen head tool.

B. Parts List -

1. Kick Skirt (P/N 16214884)
2. Top Cover (P/N A16214153)
3. Circuit Breaker Door (P/N A16214181)
4. Left Side Panel (P/N 16214168)
5. Right Side Panel (P/N 16214171)
6. Front Cover (P/N A16217935)
7. Rear Cover (P/N C16217831)
8. Bottom Front Cover (P/N A16214195)
9. Bottom Rear Cover (P/N A16214193)
10. (6) Hexhead screws (P/N 1T41023C)
11. (12) TPAN HD MS Screws (P/N 92005A422)
12. (1) TORX FLAT HD Screw (P/N 16198870)
13. (1) TPAN HD Screw (P/N FL4102MS)
14. Four (4) screws (P/N 92005A428)

C. Plastics Subassemblies Replacement

1. For steps on how to remove plastic pieces 1 through 9 in the above Parts List, refer to "Plastics Removal" procedures. Refer to the approporiate drawing for the correct orientation of the mounting brackets.
2. **To replace Filter - Display (P/N A16217934)**
   a. remove Front Cover (P/N A16217935).
   (Refer to Fig. FM 1.6)
   b. Remove four (4) screws (P/N 16213583), from top and bottom of Filter - Display, FM (P/N A16217934).
   c. Remove filter and replace with new piece.
   d. Reassemble.

3. **To replace Right Side Panel components (P/N 16214171) -**
   a. Remove Right Side Panel.
   (Refer to Fig. FM 1.9, 1.9.1)
   b. Remove four Phillips head Screws from the Pocket Coupler Assy (P/N 16214174), three from the top half and one from the bottom half.
   c. Remove two Phillips head Screws from the Baffle Plate (P/N 16218073).
   d. Remove three Phillips head Screws and one Extension Spring (P/N 16229428) from the Circuit Breaker door release Link ASM (P/N 16214175).

e. Remove (1) Retainer - E Ring (P/N 16231473) from the top of the Coupler Door Pin (P/N 16214190), remove Pin.
Remove one Phillipshead Screws from the door Detent Spring (P/N 16217836).
Remove Coupler Door (P/N 16214184).
f. If necessary replace or repair components. Re-assemble components in the following order:

1. - Re-attach Coupler Door, re-install door pin, re-install Detent spring.
2. - Re-attach Circuit breaker door release link ASM.
3. - Re-attach Baffle Plate.
4. - Re-attach Pocket Coupler assy.

g. Re-mount Right Side panel.

Replacing Pigtail (Cable Assembly - Three Conductor, Input Power)

A. Tools Required -

1. #2 Phillips Screwdriver.
2. #1 Phillips Screwdriver.
3. ¼" Standard Screwdriver (Stubby)

B. Parts List -

1. Chassis Inner Top (P/N 16214006)
2. Cable Assembly - Three Conductor, Input Power (P/N 16214087)
3. Screws (P/N 16198864)

C. Pigtail Removal (P/N 16214087) -

1. Remove two (2) screws (P/N 16198864) from Chassis Inner Top and lift up. (Refer to Fig. PEU 1.8, PEU 1.9.2)
2. Loosen circuit breaker by pressing the plastic tabs on the top of the breaker and pull it away from the main chassis.
3. Remove two (2) screws from the top of the circuit breaker.
4. Remove pigtail and install new pigtail (P/N 16214087).
5. Re-connect to circuit breaker.
6. Route wires through opening in Chassis - Inner Top and through conduit.

NOTE: Use only factory authorized Part P/N 16214087 to replace Input Power pigtail. Do not rewire the core assembly.

Replacing the Circuit Breaker

A. Tools Required -

1. #2 Phillips Screwdriver
2. #1 Phillips Screwdriver
3. ¼" Standard Screwdriver (Stubby)

B. Parts List -

1. Chassis Inner Top (P/N 16214006)
2. Cable Assembly - Three Conductor, Input Power (P/N 16214087)
3. Screws (P/N 16198867)
4. Circuit Breaker - Airpax (P/N IEGHS62-27672-1-V)
5. Gasket EMI - (P/N M-9760-23)

C. Replacing Circuit Breaker (P/N IEGHS62-27672-1-V)

1. Refer to first four (4) steps of "Removing Pigtail" Procedure.
2. Remove wires coming from EMI assembly to the bottom of circuit breaker. (Refer to Fig. PEU 1.9.5, View D-D)
3. Remove circuit breaker and replace with new one. Refer to Fig. PEU 1.9.5, View D-D, for correct wiring instructions.
4. Re-assemble.

Replacing EMI Gasket -

A. Tools Required -

1. #2 phillips Screwdriver
2. X-acto knife

B. Parts List -

1. Gasket - EMI (P/N 8408-9143-56)

C. Replacing EMI Gasket (P/N 8408-9143-56)

1. Examine gasket material for any damage.
2. To remove damaged material, use an X-acto knife and cut the area to be changed.
3. Use the knife to lift up one end of the damaged piece and pull up and away from chassis.
4. Clean any residual adhesive with alcohol.
5. Measure and cut a length of gasket material equal to the size of the damaged piece.
6. Remove paper backing and apply to area..
7. Re-assemble.

Removing and Replacing the Fan

A. Tools Required -

1. #2 Phillips Screwdriver

B. Parts List -

1. Twelve (12) screws (P/N IT41213C)
2. Gasket - EMI (P/NM-9760-23) - As Required
3. Cover - Fan (P/N 16216450)
4. Fan - Comair (P/N 20172
5. Cable - Fan (P/N 16214086)

C. Replacing the Fan (P/N 20172)

1. Remove twelve (12) screws (P/N IT41213C) from Cover - Fan (P/N 16216450). (Refer to Fig. PEU 1.9.5)
2. Pull Cover off of main chassis.
3. Disconnect Cable - Fan connector at fan terminals.
4. Remove four bolts from fan base.
5. Remove old fan and replace with new one (P/N 21072).
6. Re-install Cover - Fan. Replace any damaged Gasket material before re-installing cover.

Cleaning - Floormount SCM

A. Suggested Cleaning Supplies:

1. Housecleaner (4O9, Fantastik, etc) - for cleaning plastics
2. Protectant (Son Of A Gun, Armorall, etc)
3. Shop-type rags or Paper towels

Cleaning the Floormount-SCM

1. Use the cleaner to remove any dirt accumulation on the outside.
2. Use the protectant after cleaning.

Note: Avoid getting protectant on Coupler Assembly handle.

DRAWINGS

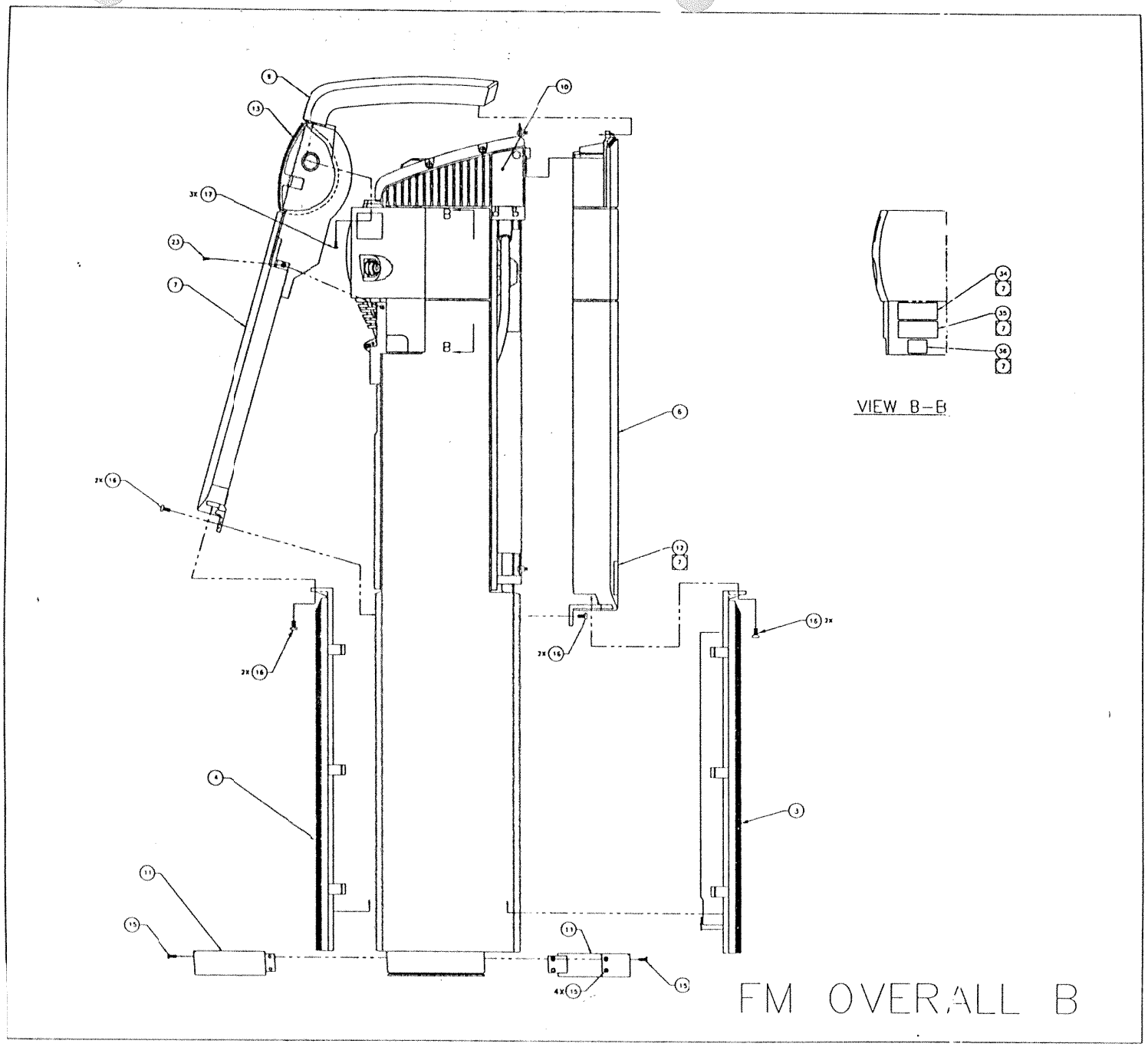
Illustrated Parts Breakdown

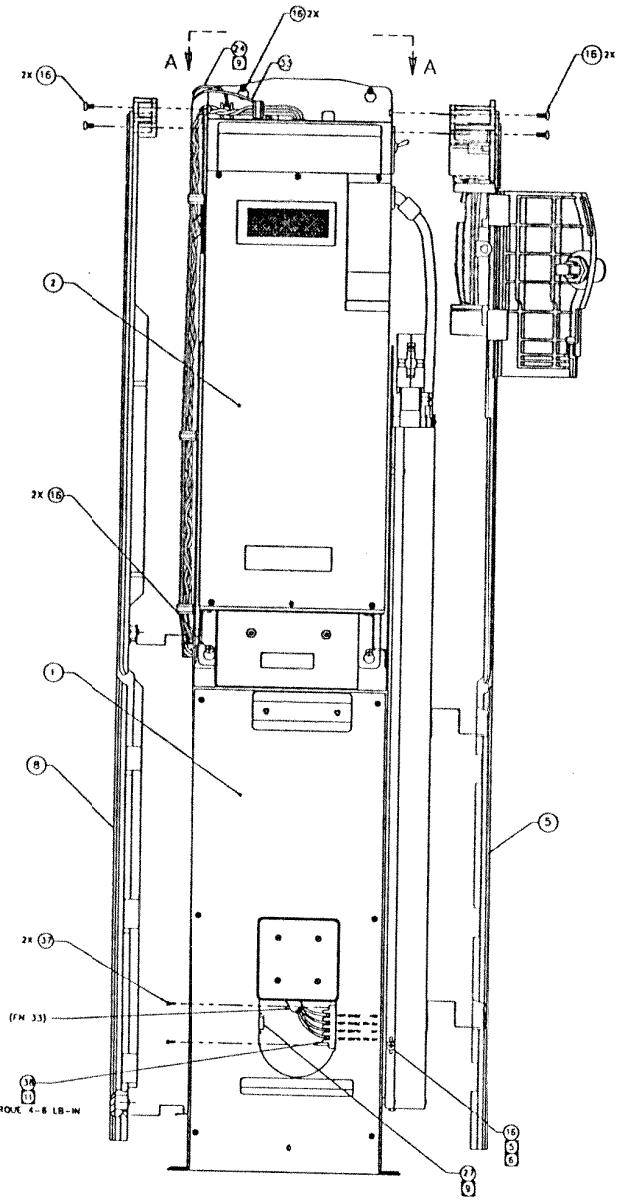
Table of Contents

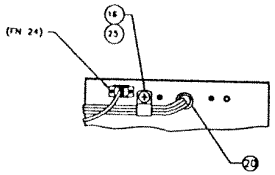
PG #	FILE NAME	DWG TITLE
1	FM4149A DWG	FM OVERALL A
2	FM4149B DWG	FM OVERALL B
3	FM4149C DWG	FM OVERALL C
4	FM4149D DWG	FM OVERALL D
5	FMKICK DWG	FM KICK PLATE SKIRT
6	FMFBTM DWG	FM FRONT BOTTOM COVER
7	FMRBTM DWG	FM REAR BOTTOM COVER
8	FMFCVR DWG	FM FRONT COVER
9	FMTOP DWG	FM TOP COVER
10	FMBCVR DWG	FM TOP BACK COVER
11	FMCBD DWG	FM CBD (CKT BRKR DOOR)
12	FML_PNL DWG	FM LEFT PANEL
13	FMRPNL DWG	FM RIGHT PANEL
14	FMPEU DWG	FM PEU
15	FMRTRC02 DWG	FM 1.4149-A
16	FMRETRA DWG	FM RETRACTION ASSEMBLY
17	WMFCVR DWG	WM FRONT COVER
18	WML_RPNL DWG	WM RIGHT SIDE PANEL
19	WMDOGHSE DWG	(1/2,2/2)
20	WMDOGHSE DWG	(1/2,2/2)
21	WMPEU DWG	WM PEU
22	PEUFAN.DWG	PEUFAN

1	16234692	LABEL-WARNING, VENT		38
2	16198867	SCREW, TPAN HD, (M4X14)		37
1	16234697	LABEL-CAUTION, ELEC SHOCK		36
1	16234694	LABEL-WARNING, PROP VENT		35
1	16234695	LABEL-CAUTION, MAGNECHARGE		34
1	C16239616	CABLE ASM-VENT CONT		33
1	3302	CLAMP-CABLE CONNECTOR (THOMAS&BETTS)		32
2	PLT1.5I-C	CABLE TIE (PANDUIT)		31
3IN	FIT-221-LT-1.5IN	SLEEVING, HEAT SHRINK ø1.5IN (ALPHA)		30
1	2643102002	CHOKE (FAIR-RITE)		29
(3) 3	90576A113	NUT, M4, LOCK		28
1	DE-59-20	CAP-DUST (ITT CANNON)		27
1	16198864	SCREW, TPAN HD, (M4 X 8)		26
7	SPN-5	CLAMP (RICHCO)		25
1	45-308-BU	CABLE ASM--RS232 (G.C.ELECTRONICS)		24
1	FL4102MS	SCREW, TORX FLAT HD,(M4X10) (IWATA)		23
1	9C25ML0530	SCREW, SHOULDER (SDP)		22
2	7C55MPS1906	BEARING (SDP)		21
1	2850	GROMMET (HEYCO)		20
1	600-GP-4	TERMINAL BLOCK (MARATHON)		19
1	SPN-9	CLAMP (RICHCO)		18
3	16198870	SCREW, TPAN HD, (M4 X 20)		17
(3) 18	92005A422	SCREW, TPAN HD MS (M6 X 12)		16
6	IT41023C	SCREW, BLK ZINC PLATED, (M4X10) (IWATA)		15
2	A16214147	WHEEL - PIVOT		14
1	A16217934	FILTER - DISPLAY, FM		13
1	16218043	LABEL-ID, SCM FM		12
2	A16214884	PLATE-KICK SKIRT		11
1	A16214181	DOOR ASM-CIRCUIT BREAKER		10
1	A16214153	COVER ASM-TOP		9
1	A16214168	PANEL ASM-LEFT SIDE		8
1	A16217935	COVER ASM-FRONT		7
1	C16217831	COVER ASM--REAR		6
1	A16214171	PANEL ASM-RIGHT SIDE		5
1	A16214195	COVER ASM-BOTTOM FRONT		4
1	A16214193	COVER ASM-BOTTOM REAR		3
1	C16214148	MODULE ASM--PEU, FM		2
1	C16214197	FRAME ASM-SCM, FM		1

FM OVERALL A


VIEW B-B
FM OVERALL B





VIEW A-A

1	16234692	LABEL-WARNING, VENT		38
2	16198867	SCREW, TPAN HD, (M4X14)		37
1	16234697	LABEL-CAUTION, ELEC SHOCK		36
1	16234694	LABEL-WARNING, PROP VENT		35
1	16234695	LABEL-CAUTION, MAGNECHARGE		34
	C16239618	CABLE ASM-VENT CONT		33
	3302	CLAMP-CABLE CONNECTOR (THOMAS&BETTS)		32
7	PLT1.5I-C	CABLE TIE (PANDUIT)		31
3IN	FIT-221-LT-1.5IN	SLEEVING, HEAT SHRINK #1.5IN (ALPHA)		30
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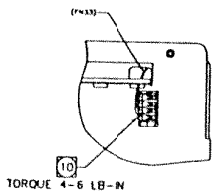
1	A16214168	PANEL ASM-LEFT SIDE		8
1	A16217935	COVER ASM-FRONT		7
1	C16217831	COVER ASM-REAR		6
1	A16214171	PANEL ASM-RIGHT SIDE		5
1	A16214195	COVER ASM-BOTTOM FRONT		4
1	A16214193	COVER ASM-BOTTOM REAR		3
1	C16214148	MODULE ASM-PEU, FM		2
1	C16214197	FRAME ASM-SCM, FM		1

FM 1.4149-S

FM OVERALL C



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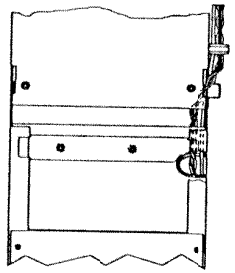

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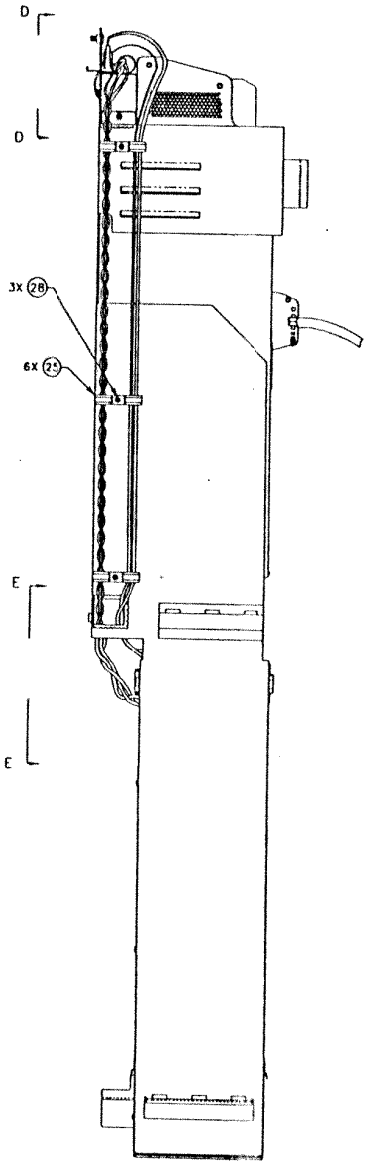
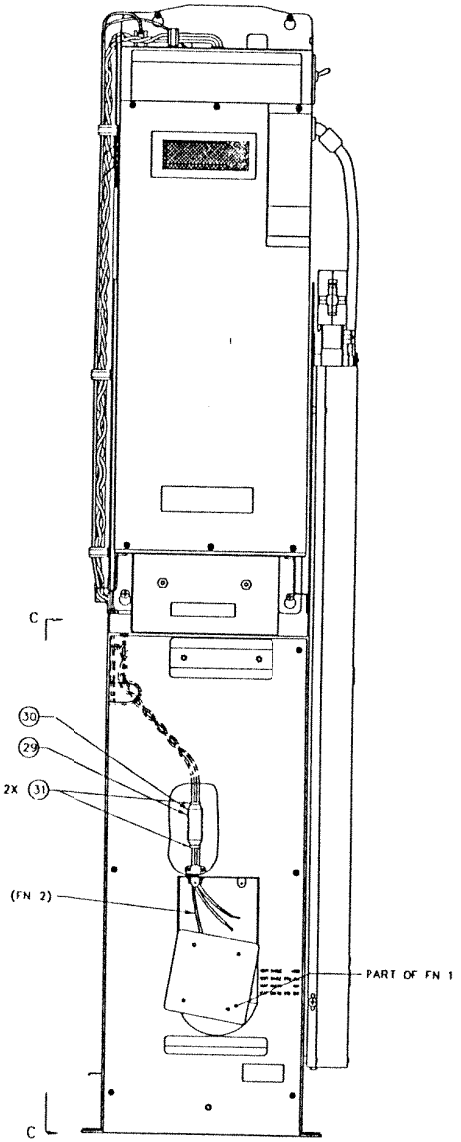
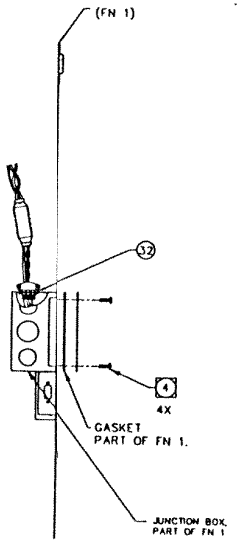
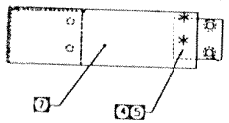


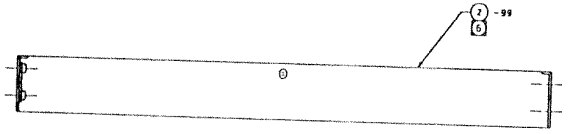


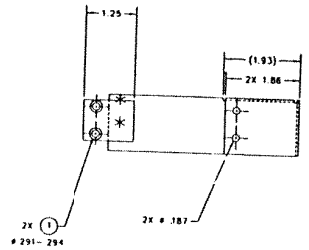


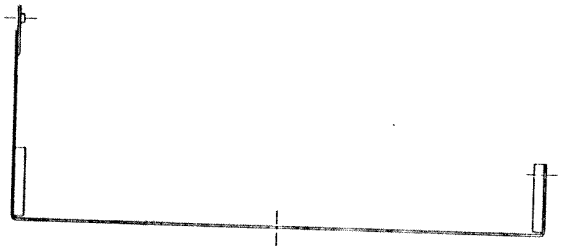
VIEW C-C

FM OVERALL D



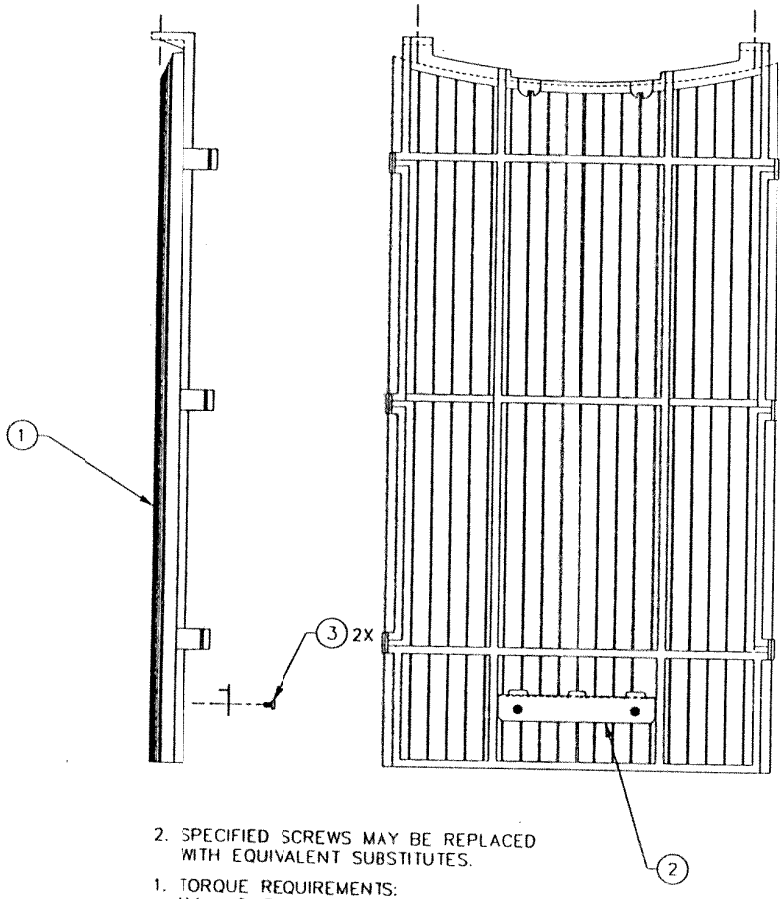






1	-99	PLATE	2
2	16223002	NUT- CLINCH, M4	1

FM KICK PLATE SKIRT



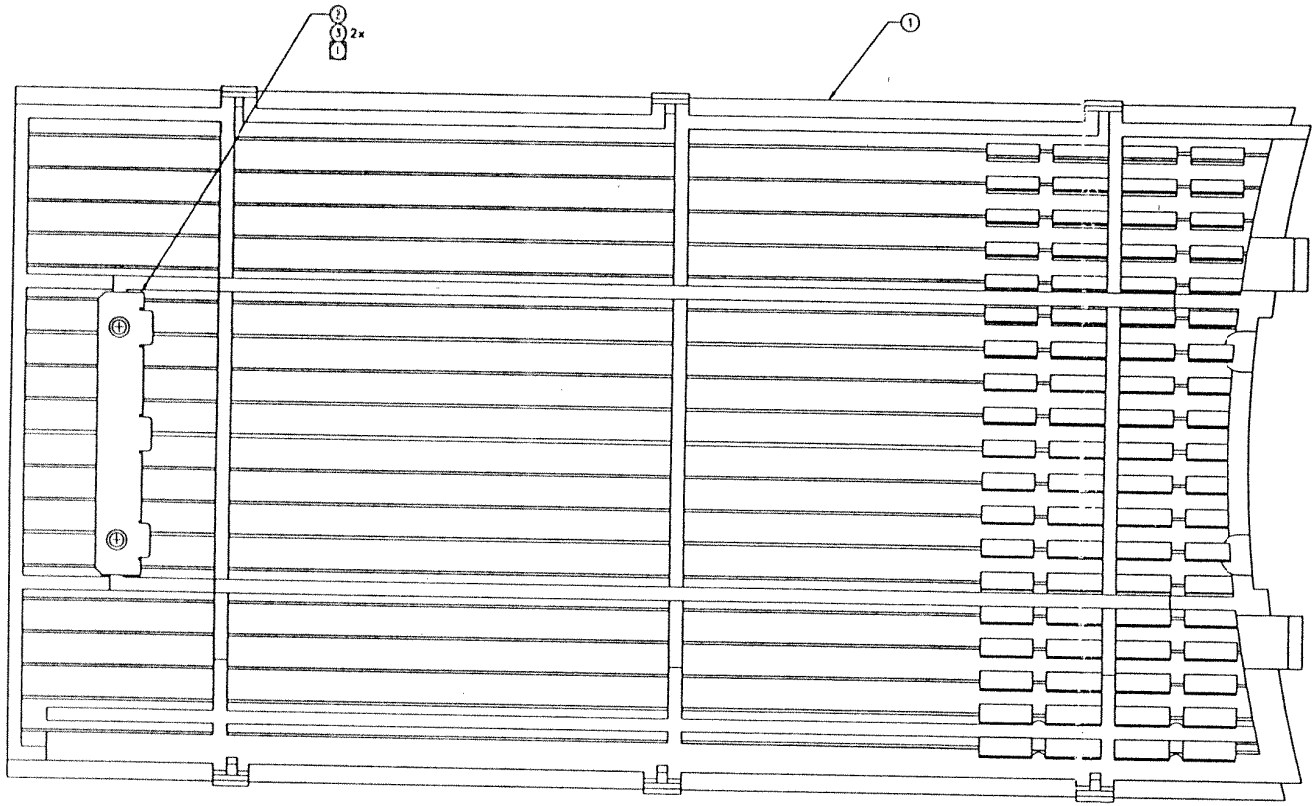
2. SPECIFIED SCREWS MAY BE REPLACED WITH EQUIVALENT SUBSTITUTES.

1. TORQUE REQUIREMENTS:
   M4 6-8 LB-IN.

NOTES- UNLESS OTHERWISE SPECIFIED

2	16212478	SCREW-TPH TT CC SEMS M4x6		3
1	16214170	BRACKET - PANEL MTG		2
1	16214196	PANEL - BOTTOM FRONT		1

FRONT BOTTOM COVER



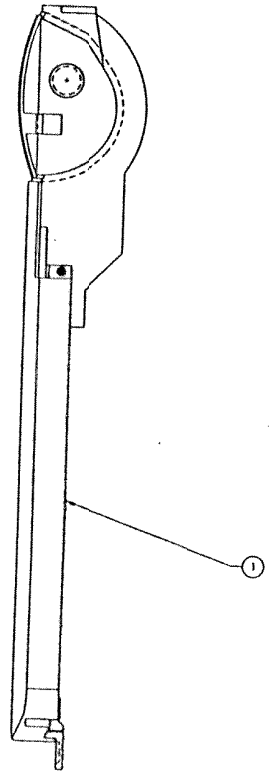
2. SPECIFIED SCREWS MAY BE REPLACED WITH EQUIVALENT SUBSTITUTES.

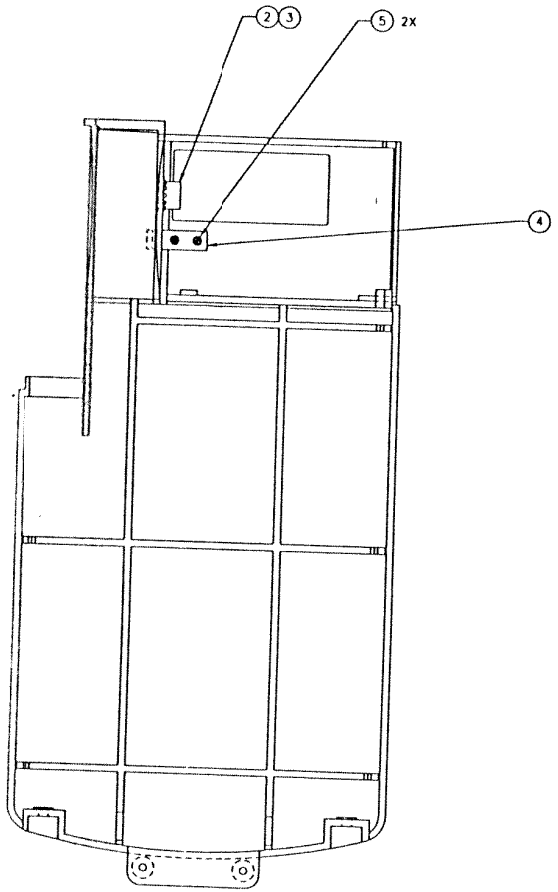
[1] TORQUE REQUIREMENTS:
M4 6-8 LB-IN.

NOTES: UNLESS OTHERWISE SPECIFIED

2	16212428	SCREW-TPH TT CC SEMS (M4x6)	3
1	16214170	BRACKET-PANEL MTG	2
1	16214194	COVER-BOT REAR	1

FM REAR BOTTOM COVER



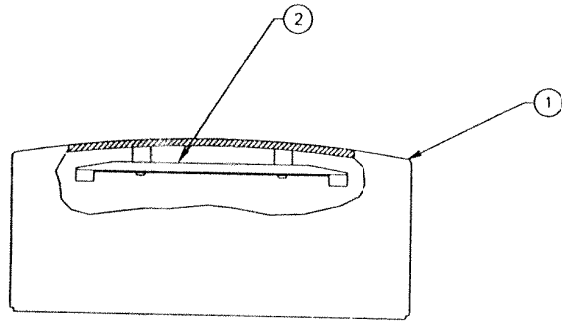


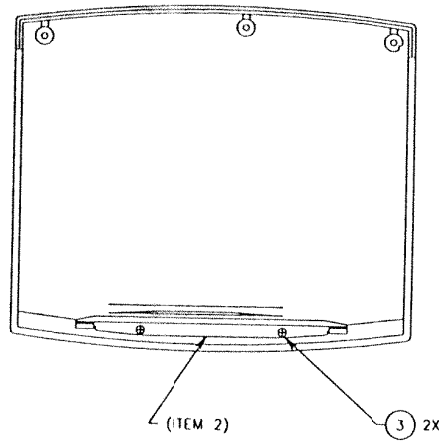
1. TORQUE REQUREMENTS:
   M4 : 6-8 LB-IN.

NOTES: UNLESS OTHERWISE SPECIFIED.

2	16212430	SCREW, PAN HD (M4 X 10)	5
1	16214158	PLATE-LATCH	4
1	16227067	FASTENER, INTERNAL SPRINGRIP	3
1	16217824	LENS-DIFFUSING	2
1	16214157	COVER-FRONT	1

FM FRONT COVER





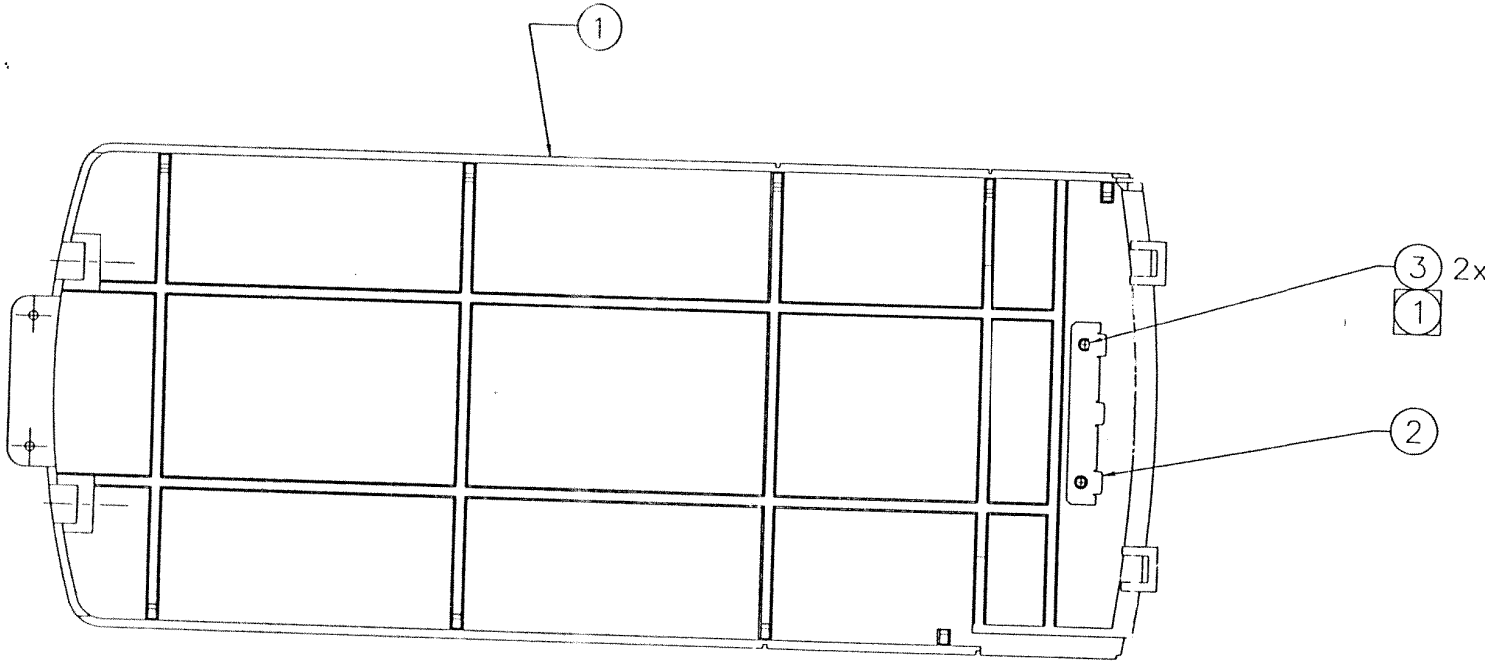
2. SPECIFIED SCREWS MAY BE REPLACED WITH EQUIVALENT SUBSTITUTES.

1. TORQUE REQUIREMENTS:
   M4 6-8 LB-IN.

NOTES- UNLESS OTHERWISE SPECIFIED

2	16212428	SCREW-TPH TT CC SEMS (M4x6)		3
1	16214163	BRACKET-TOP COVER MTG		2
1	16214162	COVER-TOP		1

FM TOP COVER



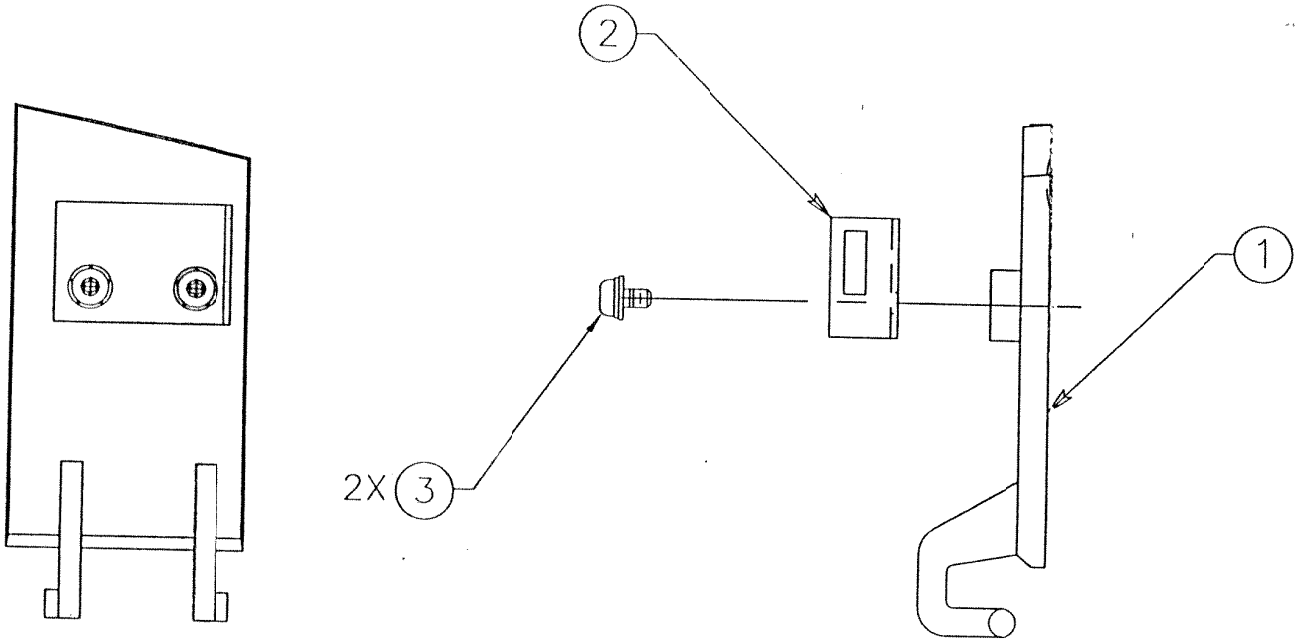
2. SPECIFIED SCREWS MAY BE REPLACED WITH EQUIVALENT SUBSTITUTES.

[1] TORQUE REQUIREMENTS:
M4 6-8 LB-IN.

NOTES: UNLESS OTHERWISE SPECIFIED

2	16212428	SCREW-TPH T? CC SEMS M4x6	3
1	16214170	BRACKET-PANEL MTG	2
1	16217832	COVER-REAR	1

FM TOP BACK COVER

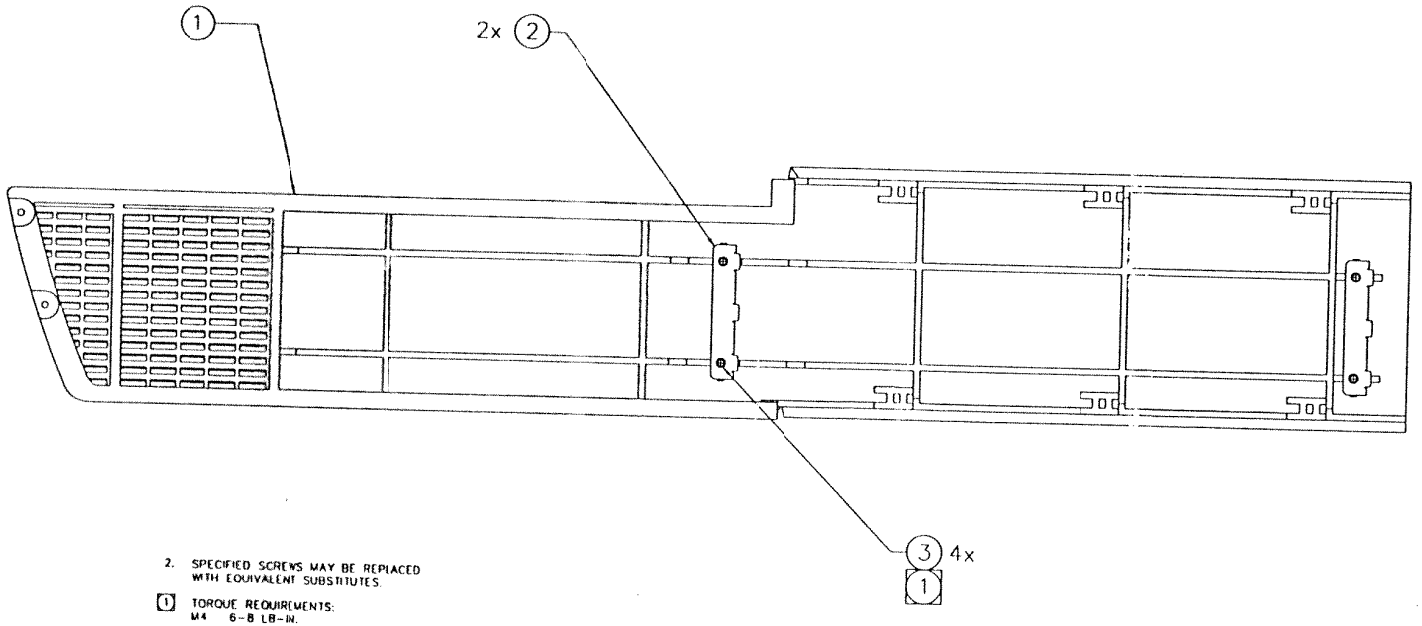


1. TORQUE REQUIREMENTS:
   M4 6–8 LB–IN.

NOTES – UNLESS OTHERWISE SPECIFIED

FM CBD

2	16212428	SCREW–TPH TT CC SEMS,M4 x 6	3
1	16214183	PLATE–STRIKE	2
1	16214182	DOOR–CIRCUIT BREAKER	1



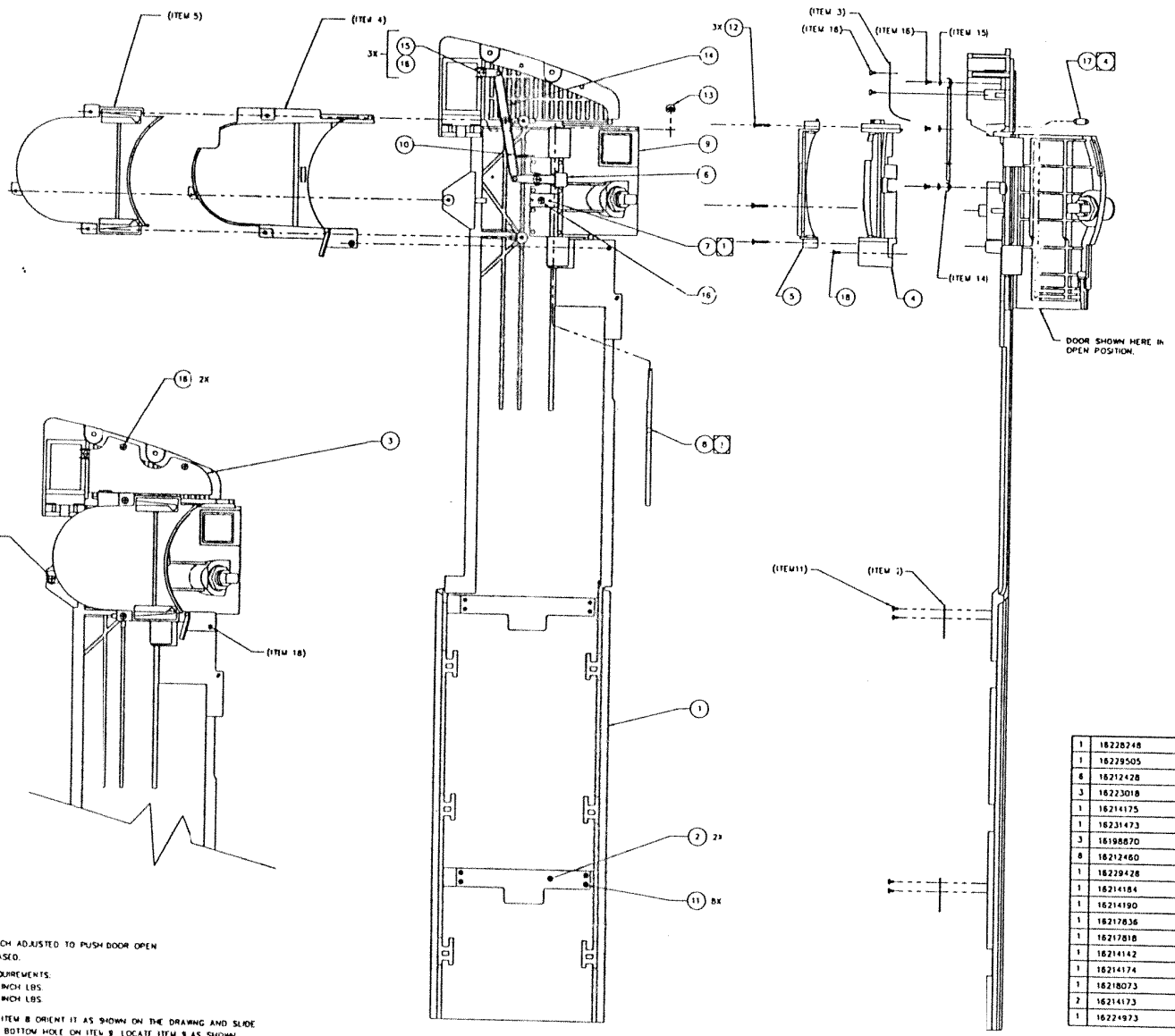
2. SPECIFIED SCREWS MAY BE REPLACED WITH EQUIVALENT SUBSTITUTES.

[1] TORQUE REQUIREMENTS:
M4 6-8 LB-IN.

NOTES: UNLESS OTHERWISE SPECIFIED

4	16212428	SCREW-TPH TT CC SEMS (M4x6)	3
2	16214170	BRACKET-PANEL MTG	2
1	16214169	PANEL-LEFT SIDE	1

FM LEFT PANEL



1	16228248	SCREW, M4 X 8	18
1	16229505	BULLET CATCH	17
6	16212428	SCREW, M4 X 6	16
3	16223018	SHOULDER WASHER	15
1	16214175	LINK ASM-C/B DOOR RELEASE	14
1	16231473	RETAINER-E RING	13
3	16198870	SCREW, M4 X 20	12
8	16212460	SCREW, M3 X 6	11
1	16229428	SPRING-EXTENSION	10
1	16214184	MDL ASM-COUPLER DOOR	9
1	16214190	PIN-COUPLER DOOR	8
1	16217836	SPRING-DOOR DETENT	7
1	16217818	BUTTON-DOOR	6
1	16214142	POCKET-COUPLER	5
1	16214174	COVER-COUPLER POCKET	4
1	16218073	PLATE-RIGHT SIDE BAFFLE	3
2	16214173	BRACKET-RIGHT SIDE	2
1	16224973	PANEL ASM-RIGHT HINGE	1

4 BULLET CATCH ADJUSTED TO PUSH DOOR OPEN WHEN RELEASED.

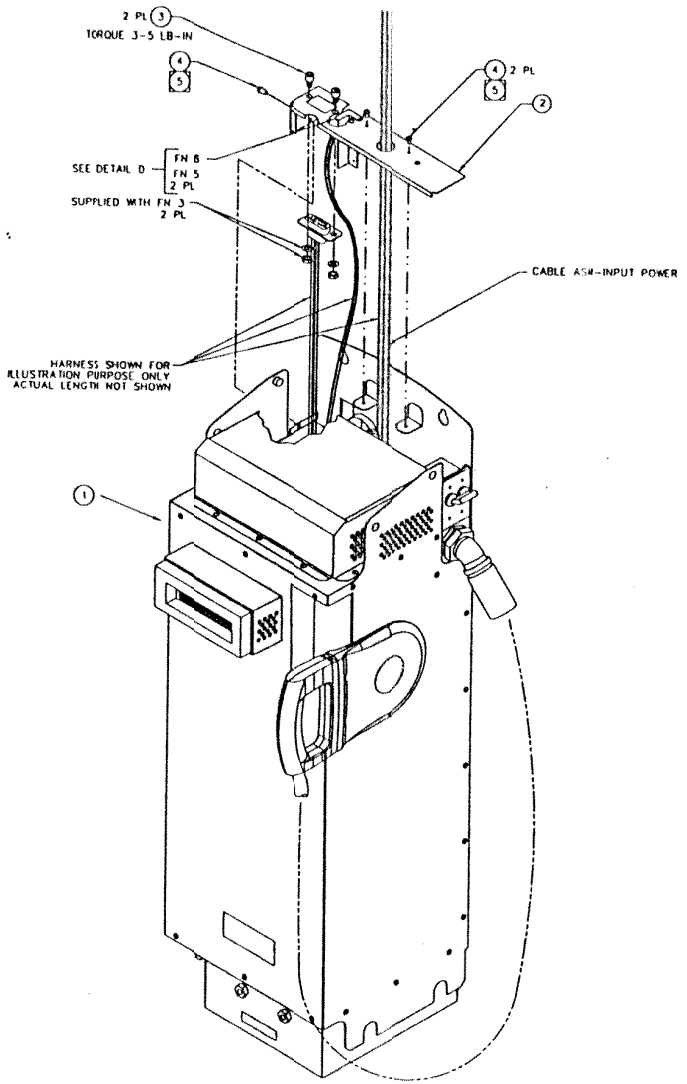
3 TORQUE REQUIREMENTS:
M3 : 4-8 INCH LBS.
M4 : 8-8 INCH LBS.

2 TO INSTALL ITEM 8 ORIENT IT AS SHOWN ON THE DRAWING AND SLIDE IT INTO THE BOTTOM HOLE ON ITEM 9. LOCATE ITEM 9 AS SHOWN, IN THE OPEN POSITION AND SLIDE ITEM 8 THROUGH THE HOLE ON THE PANEL ASSEMBLY (ITEM 1). SLIDE THE PIN (ITEM 8) THROUGH THE TOP "D" SHAPED HOLE ON ITEM 9 AND SECURE IT WITH THE "E" RING (ITEM 13).

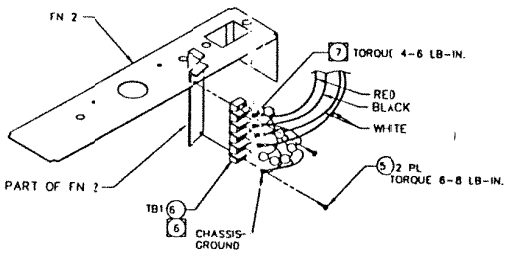
1 INSTALL THE SPRING, (ITEM 7) AFTER INSTALLING THE PIN (ITEM 8).

NOTES: UNLESS OTHERWISE SPECIFIED.

FM RIGHT PANEL



FM PEU



DETAIL D

ROTATED 90° CW

[7] INSTALL CABLE TERMINAL LUGS USING SCREWS PROVIDED WITH TERMINAL BLOCK.

[6] ATTACH WIRES TO FN 6 PRIOR TO ASSEMBLING FN 2 TO FN 1.

[5] INITIAL TAPPING TORQUE M4: 10-13 LB-IN.
FINAL ASSY TORQUE M4: 6-8 LB-IN.

4. TORQUE REQUIREMENTS:
   M3: 4-6 LB-N
   M4: 6-8 LB-N
   M4(NYLON): 1-2 LB-IN
   10-32: 12-14 LB-IN
   NUT: .625-24 UNEF 150-170 LB-IN

3. ASSEMBLE COMPONENTS AS SHOWN.

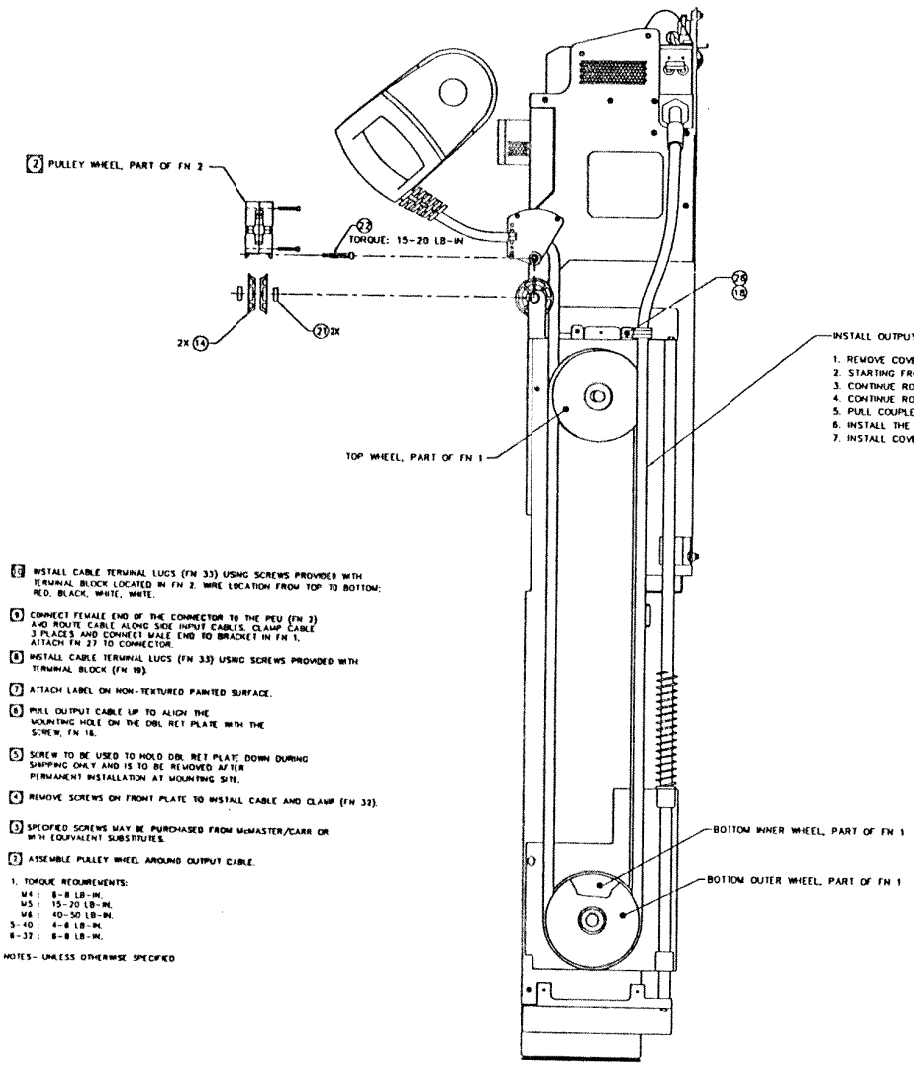
2. REF DES ARE FOR REFERENCE ONLY AND DO NOT NECESSARILY APPEAR ON PART.

1. FOR SCHEMATIC DIAGRAM, SEE DRAWING 16213991.

NOTES - UNLESS OTHERWISE SPECIFIED

QTY PER UNIT	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	ZONE	FIND NO
1		16233353	TERMINAL BLOCK		6
2		16198867	SCREW-PAN HD,STEEL (M4X12)		5
3		16198864	SCREW-PAN HD,STEEL (M4X8)		4
2		16219044	POST-JACK		3
1		16214006	CHASSIS-INNER TOP		2
1		16214007	MODULE ASM-PEU		1

PARTS LIST


[2] PULLEY WHEEL, PART OF FN 2
(23) TORQUE: 15-20 LB-IN
2X (14)
(21) 2X
(26)
(15)
TOP WHEEL, PART OF FN 1
BOTTOM INNER WHEEL, PART OF FN 1
BOTTOM OUTER WHEEL, PART OF FN 1

INSTALL OUTPUT CABLE, PART OF FN 2, INTO JBL RETRACTION AS FOLLOWS.

1. REMOVE COVER-RETRACTION, PART OF FN 1 FROM FRAME ASM (NOT SHOWN).
2. STARTING FROM THE COUPLER PADDLE END, ROUTE THE CABLE AROUND THE BOTTOM INNER WHEEL.
3. CONTINUE ROUTING CABLE AROUND THE TOP WHEEL.
4. CONTINUE ROUTING CABLE AROUND THE BOTTOM OUTER WHEEL.
5. PULL COUPLER PADDLE UP AND INSTALL PULLEY WHEEL (PART OF FN 2) IN MOUNTING LOCATION.
6. INSTALL THE WHEEL-PIVOT, FN 14, FN 21 AND FN 22.
7. INSTALL COVER-RETRACTION BACK ONTO FRAME ASM (FN 1).

[6] INSTALL CABLE TERMINAL LUGS (FN 33) USING SCREWS PROVIDED WITH TERMINAL BLOCK LOCATED IN FN 2. WIRE LOCATION FROM TOP TO BOTTOM: RED, BLACK, WHITE, WHITE.

[9] CONNECT FEMALE END OF THE CONNECTOR TO THE PEU (FN 3) AND ROUTE CABLE ALONG SIDE INPUT CABLES. CLAMP CABLE 3 PLACES AND CONNECT MALE END TO BRACKET IN FN 1. ATTACH FN 27 TO CONNECTOR.

[8] INSTALL CABLE TERMINAL LUGS (FN 33) USING SCREWS PROVIDED WITH TERMINAL BLOCK (FN 19).

[7] ATTACH LABEL ON NON-TEXTURED PAINTED SURFACE.

[6] PULL OUTPUT CABLE UP TO ALIGN THE MOUNTING HOLE ON THE DBL RET PLATE WITH THE SCREW, FN 18.

[5] SCREW TO BE USED TO HOLD DBL RET PLATE DOWN DURING SHIPPING ONLY AND IS TO BE REMOVED AFTER PERMANENT INSTALLATION AT MOUNTING SITE.

[4] REMOVE SCREWS ON FRONT PLATE TO INSTALL CABLE AND CLAMP (FN 32).

[3] SPECIFIED SCREWS MAY BE PURCHASED FROM McMASTER/CARR OR WITH EQUIVALENT SUBSTITUTES.

[2] ASSEMBLE PULLEY WHEEL AROUND OUTPUT CABLE.

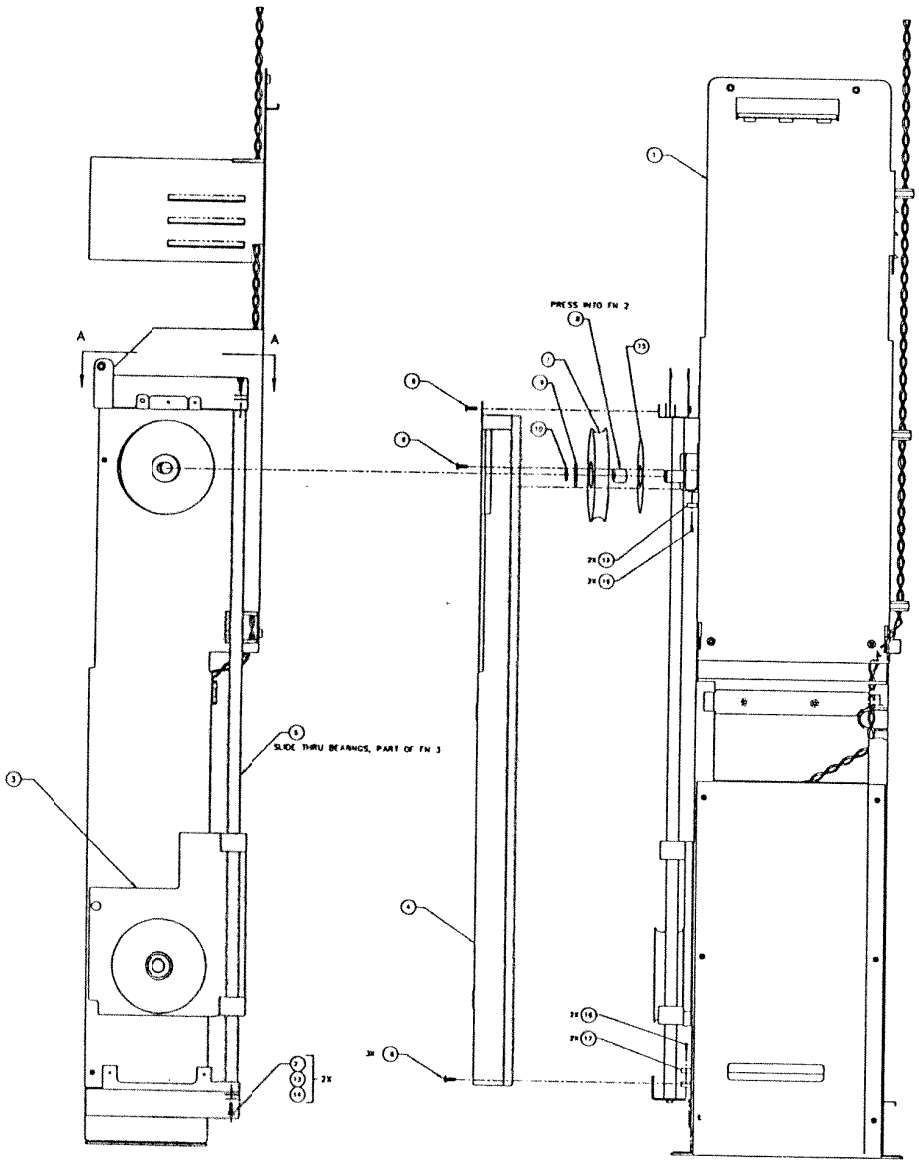
1. TORQUE REQUIREMENTS:
   M4 : 6-8 LB-IN.
   M5 : 15-20 LB-IN.
   M6 : 40-50 LB-IN.
5-40 : 4-6 LB-IN.
8-32 : 6-8 LB-IN.

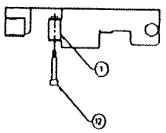
NOTES- UNLESS OTHERWISE SPECIFIED

1	16234E92	LABEL-WARNING VENT		36
2	16198847	SCREW, TPAN HD, (M4X14)		37
1	16234E87	LABEL-CAUTION, ELEC SHOCK		38
1	16234864	LABEL-WARNING PROP VENT		35
1	16234895	LABEL-CAUTION, MAGNECHARGE		34
1	C16235-1L	CABLE ASM-VENT CONT		33
1	3302	CLAMP-CABLE CONNECTOR (THOMAS&BETTS)		32
2	PLT1.5M-C	CABLE TIE (PANDUIT)		31
3*	FIT-221-LT-1.5IN	SLEEVING, HEAT SHRINK ø1.5IN (ALPHA)		30
1	2643102032	CHOKE (FAIR-RITE)		29
[3] 3	90576A113	NUT, M4, LOCK		28
1	DE-59-23	CAP-DUST (ITT CANNON)		27
1	16198864	SCREW, TPAN HD, (M4 X 8)		26
7	SPN-5	CLAMP (RICHCO)		25
1	45-308-8U	CABLE ASM-RS232 (G.C.ELECTRONICS)		24
1	FL410Z-5	SCREW, TORX FLLT HD,(M4X10) (IWATA)		23
1	9C25ML0530	SCREW, SHOULDER (SDP)		22
2	7C55MPS1908	BEARING (SDP)		21
1	2850	GROMMET (HEYCO)		20
1	800-GP-4	TERMINAL BLOCK (MARATHON)		19
1	SPN-8	CLAMP (RICHCO)		18
3	16198870	SCREW, TPAN HD, (M4 X 20)		17
[3] 18	92005A422	SCREW, TPAN HD MS (M6 X 12)		16
6	IT410236	SCREW, BLK ZINC PLATED, (M4X10) (IWATA)		15
2	A18214147	WHEEL - PIVOT		14
1	A18217834	FILTER - DISPLAY, FM		13
1	16218043	LABEL-ID, SCM FM		12
2	A18214134	PLATE-KICK SKMT		11
1	A18214181	DOOR ASM-CIRCUIT BREAKER		10
1	A18214153	COVER ASM-TOP		9
1	A18214188	PANEL ASM-LEFT SIDE		8
1	A18217135	COVER ASM-FRONT		7
1	C18217831	COVER ASM-REAR		6
1	A18214191	PANEL ASM-RIGHT SIDE		5
1	A18214155	COVER ASM-BOTTOM FRONT		4
1	A18214183	COVER ASM-BOTTOM REAR		3
1	C18214178	MODULE ASM-PEU, FM		2
1	C18214197	FRAME ASM-SCM, FM		1

FM RETRACTION ASSEMBLY A

FM 1.4149-A





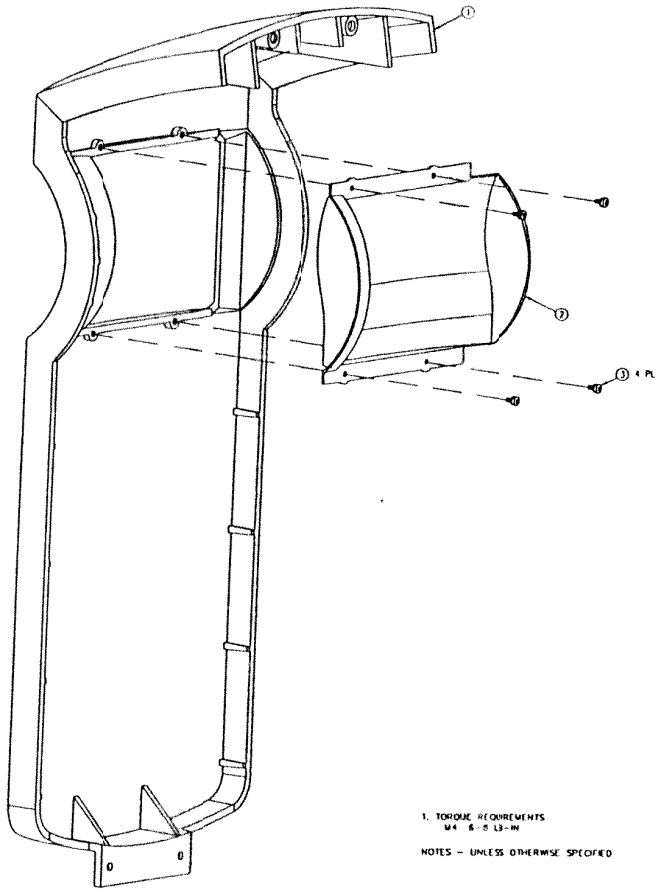
VIEW A–A

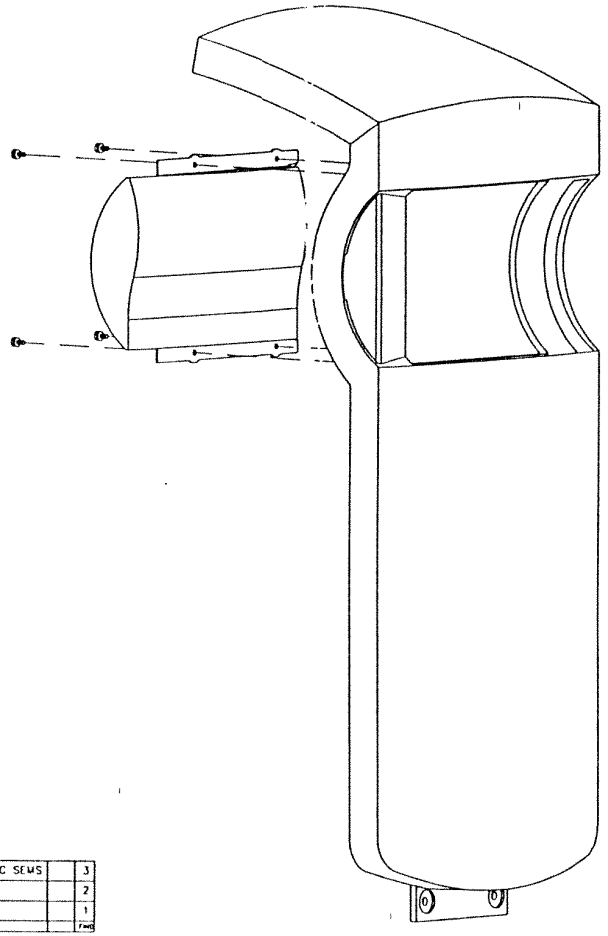
4	18223553	BUMPER,RUBBER		17
4	18200562	SCREW, M3 X 8		16
4	.8223018	WASHER, LARGE, TEFLON		15
7	.8223014	WASHER, LOCK, M8		14
7	.1508788	WASHER, FLAT, M8		13
1	15272995	SCREW, SHOULDER, M5		12
1	.8223556	SPACER, ROUND		11
1	.8229425	RING, RETAINING		10
1	18223017	WASHER		9
1	.8228426	SLEEVE BEARING		8
7	.1500914	SCREW, HEX HD, M8x12		7
3	18212428	SCREW, PAN HD, M4X6		6
	18219134	SHAFT-DBL RETRACTION		5
	.8217830	COVER-RETRACTION		4
	.8219132	MECH ASM-DBL WHEEL		3
	.8217931	WHEEL-TOP RETRACTION		2
1	.8230118	MODULE ASM-FRAME, FM		1

1. TORQUE REQUIREMENTS:
M3 - 4 LB-IN
M4 - 6-8 LB-IN
M5 - 18-24 LB-IN
M8 - 115-150 LB-IN

NOTE: UNLESS OTHERWISE SPECIFIED

FM RETRACTION ASSEMBLY B



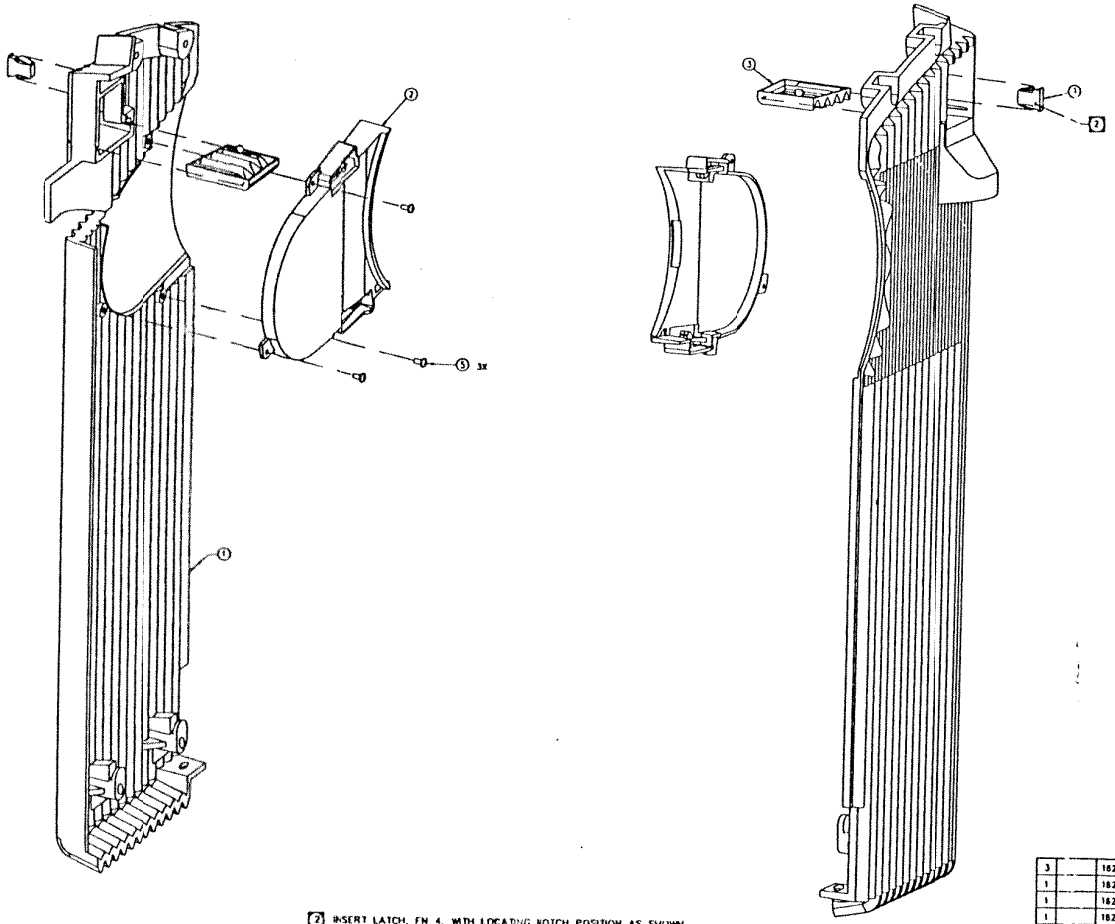


1. TORQUE REQUIREMENTS
M4 6-8 LB-IN

NOTES – UNLESS OTHERWISE SPECIFIED

QTY	P/N	NOMENCLATURE		FIND
4	16213583	SCREW, M4-.7X8 TPH MS CC SEMS		3
1	16214881	FILTER-DISPLAY, WM		2
1	16214135	COVER-FRONT		1

WM FRONT COVER



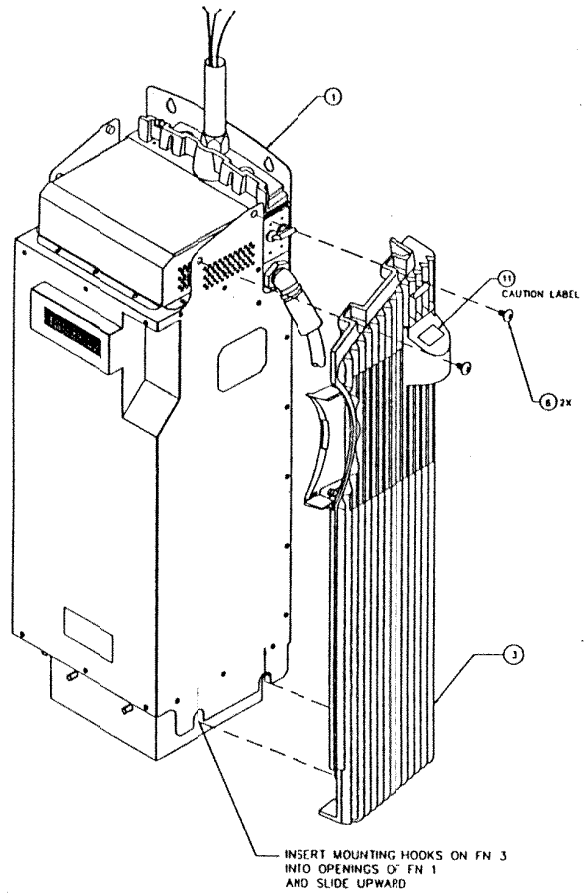
WM RIGHT SIDE PANEL

3		16212431	SCREW-M4X12 TPH TT CC SEMS	5
1		16228424	LATCH-TOUCH	4
1		16214143	DOOR-CIRCUIT BREAKER	3
1		16214142	POCKET-COUPLER	2
1		16214141	PANEL-RIGHT SIDE	1

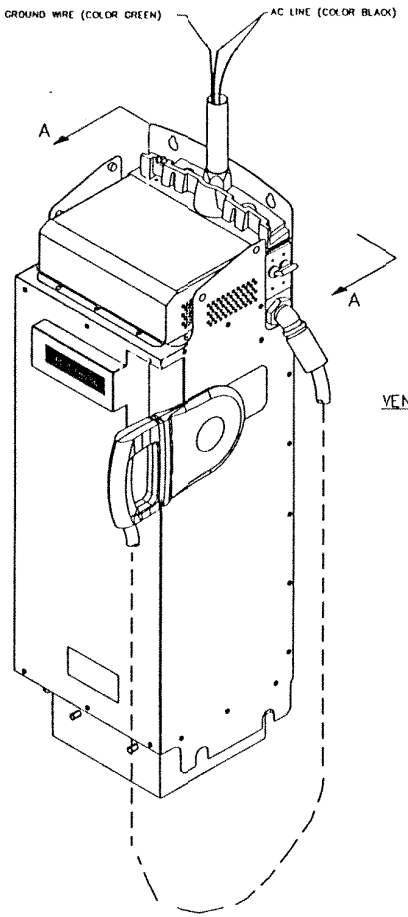
2 INSERT LATCH, FN 4, WITH LOCATING NOTCH POSITION AS SHOWN.

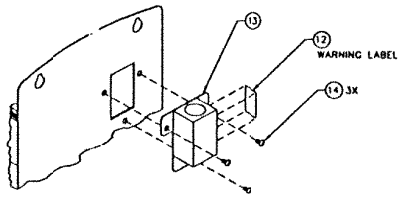
1. TORQUE REQUIREMENTS:
   M4: 1.1-1.8 Nm (10-14 LB-IN)

NOTE - UNLESS OTHERWISE SPECIFIED



RIGHT SIDE PANEL ASSEMBLY





VIEW A–A

(ISOMETRIC VIEW FROM REAR SIDE)

VENT CONTROL BRACKET AND WARNING LABEL

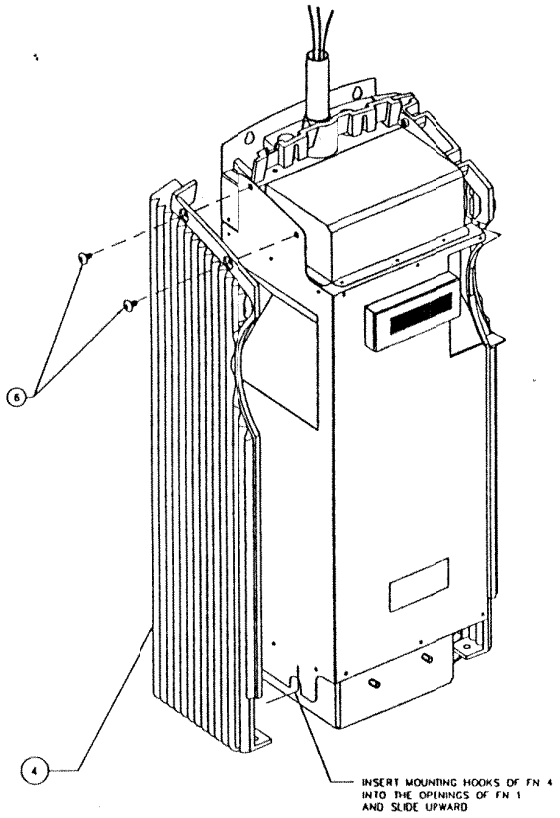
1. TORQUE REQUIREMENTS:

   M4: 6–8 LB–IN

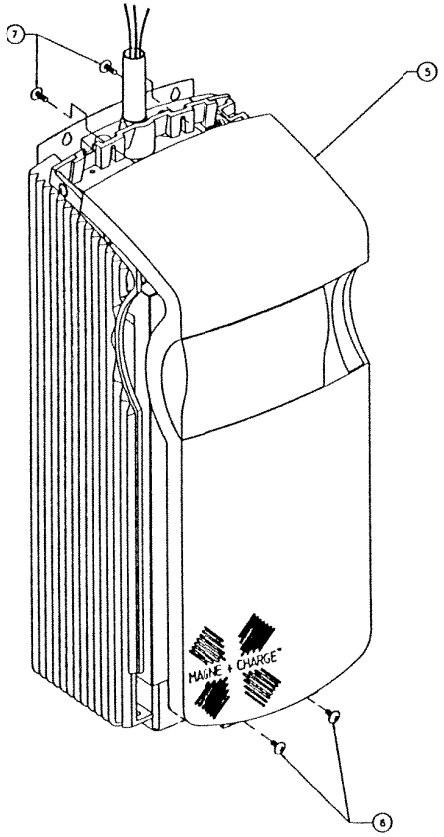
   M6: 40–50 LB–IN

NOTES–UNLESS OTHERWISE SPECIFIED

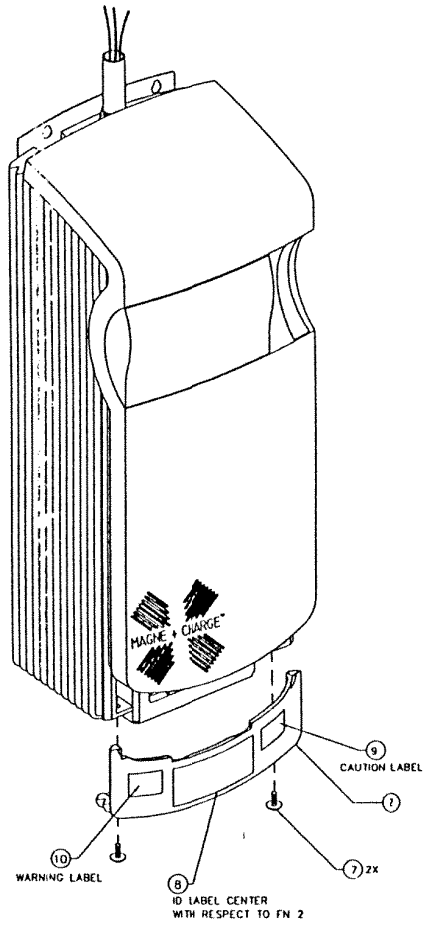
QTY REQ		PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
3		16.98864	SCREW-M4X0.7X8	14
1		16233232	BRACKET-VENT CONTROL	13
1		16234692	LABEL-WARNING	12
1		16234697	LABEL-CAUTION	11
1		16234694	LABEL-WARNING	10
1		16234695	LABEL-CAUTION	9
1		16218042	LABEL-0, SCM WM	8
4		18717040	SCREW, PAN HD, M6X18	7
6		16217043	SCREW, PAN HD, M6X12	6
1		16214134	COVER ASM-FRONT	5
1		16214882	PANEL-LEFT SIDE	4
1		16214139	PANEL ASM-RIGHT SIDE	3
1		16213992	PANEL-VALENCE	2
1		15213993	MODULE ASM-PEU, WM	1



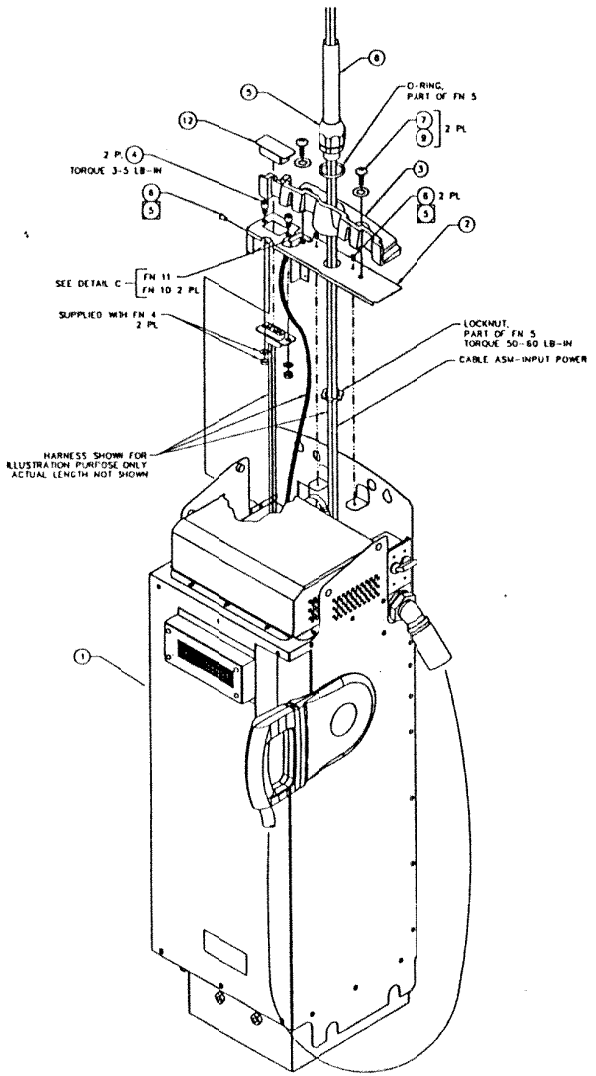
LEFT SIDE PANEL ASSEMBLY

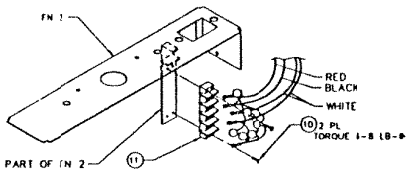


FRONT COVER ASSEMBLY



VALENCE PANEL


O-RING, PART OF FN 5
2 PL
2 PL TORQUE 3-5 LB-IN
2 PL
SEE DETAIL C
FN 11
FN 10 2 PL
SUPPLIED WITH FN 4 2 PL
LOCKNUT, PART OF FN 5 TORQUE 50-60 LB-IN
CABLE ASM-INPUT POWER
HARNESS SHOWN FOR ILLUSTRATION PURPOSE ONLY ACTUAL LENGTH NOT SHOWN



DETAIL C

ROTATED 90° CCW

[5] INITIAL TAPPING TORQUE M4: 10-13 LB-IN.
FINAL ASSY. TORQUE M4: 6-8 LB-IN.

4. TORQUE REQUIREMENTS:
M3: 4-6 LB-IN.
M4: 6-8 LB-IN.
M4 (NYLON): 1-2 LB-IN.
M6: 32-38 LB-IN.
10-32: 18-20 LB-IN.
NUT (.625-24 8NEF) 150-170 LB-IN.

3. ASSEMBLE COMPONENTS AS SHOWN.

2. REF DES ARE FOR REFERENCE ONLY AND DO NOT NECESSARILY APPEAR ON PART.

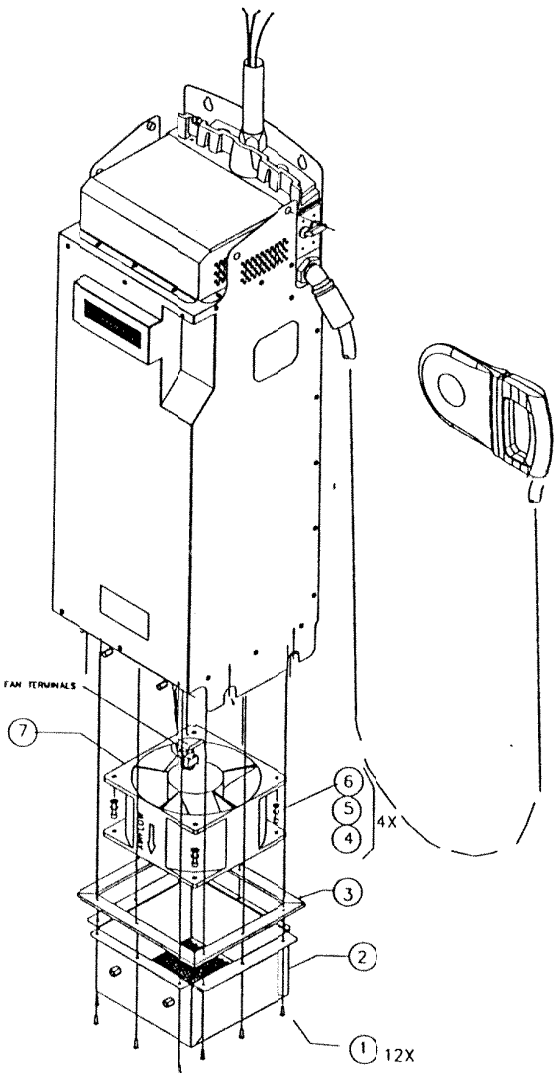
1. FOR SCHEMATIC DIAGRAM, SEE DRAWING 16213991.

NOTES – UNLESS OTHERWISE SPECIFIED

QTY REQ	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	ZONE	FIND NO
1	16233357	CAP-DUST		12
1	16233353	BLOCK-TERMINAL		11
2	16198867	SCREW-PAN HD, STEEL (M4X14)		10
2	11503974	WASHER-FLAT, 1/2 OD		9
IFT	M-9125-6	FLEXIBLE CONDUIT		8
2	16222987	SCREW-PAN HD, M6X20		7
3	16198864	SCREW-PAN HD, STEEL (M4X8)		6
1	16222235	FITTING		5
2	16219044	POST-JACK		4
1	16214880	BASE-UPPER SURROUND		3
1	16214006	CHASSIS-INNER TOP		2
1	16214007	MODULE ASM-PEU		1

PARTS LIST

WM PEU



1	16222242	FAN		7
4	16222982	SCREW, SKT HD, M4X0.7X25MM		6
5	16223012	WASHER-INTERNAL TOOTH, M4		5
4	11500303	WASHER, FLAT, M4		4
2 FT	M-9760-23	GASKET-EMI		3
1	16216450	COVER-FAN		2
32	16212433	SCREW, TORX PAN HD		1

PEU FAN

16214007

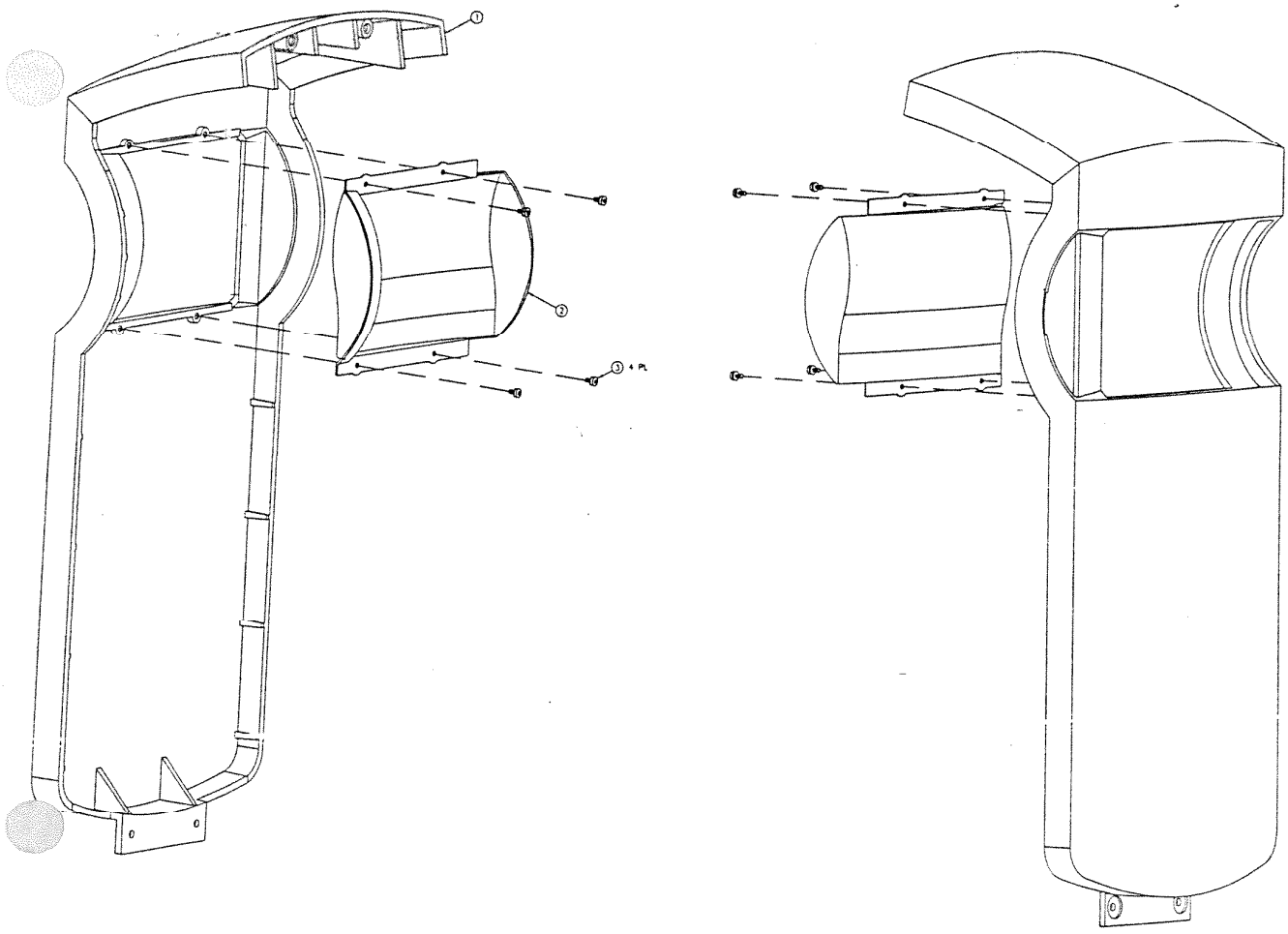


Fig. WM1.5

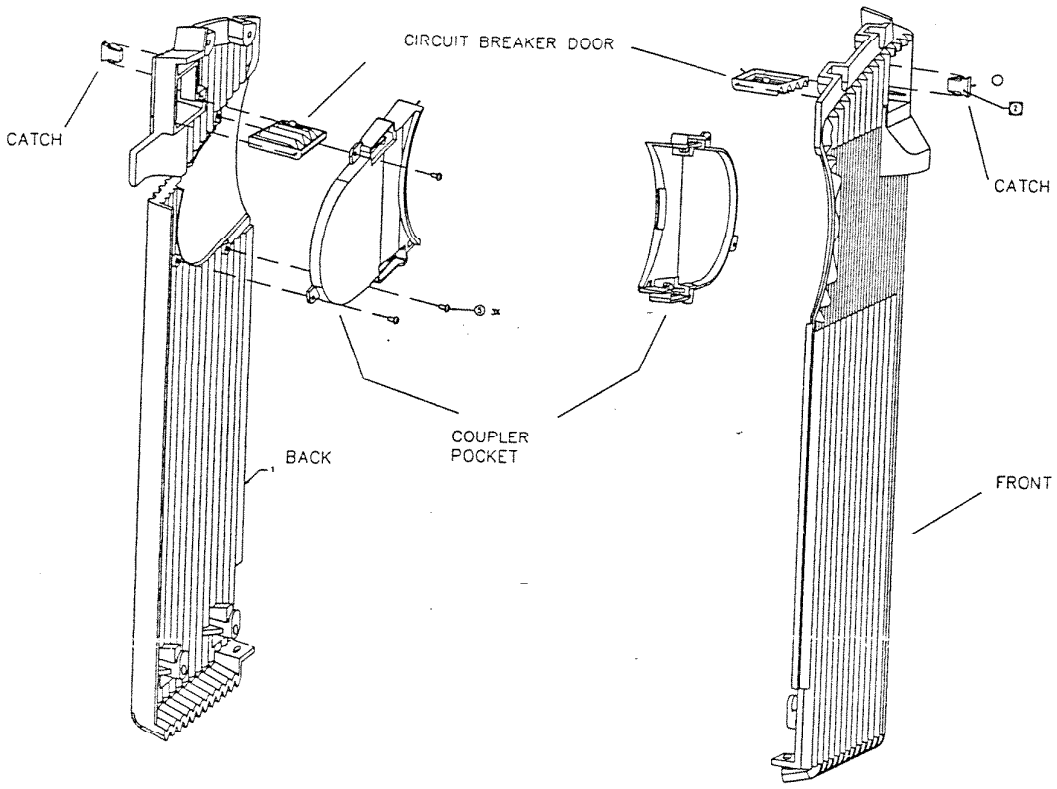


FIG. WM 1.6
RIGHT SIDE PANEL

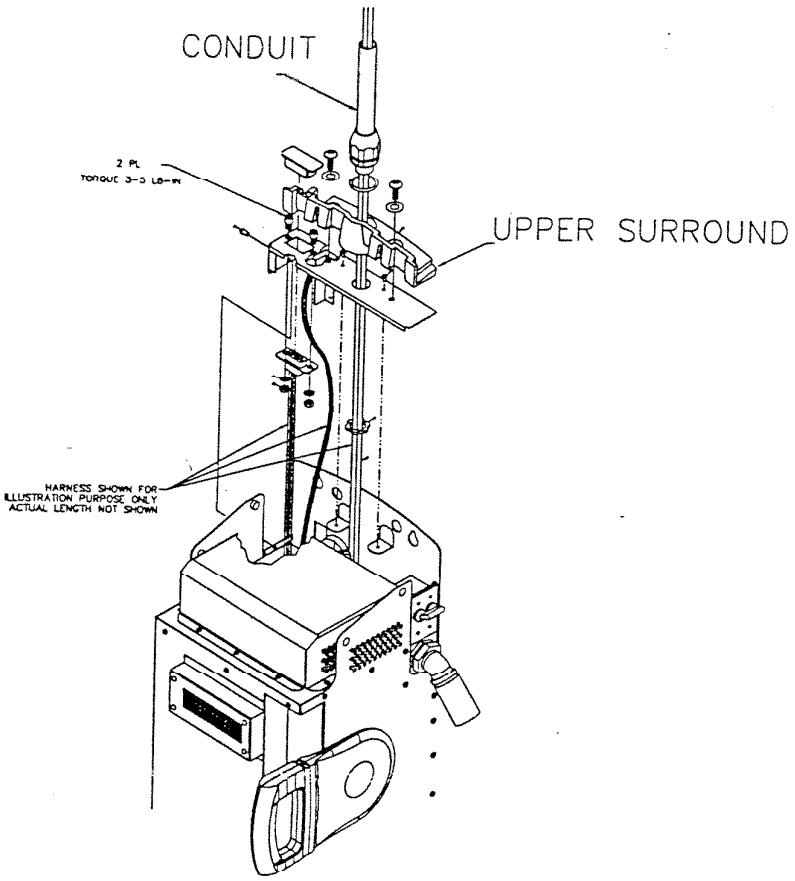
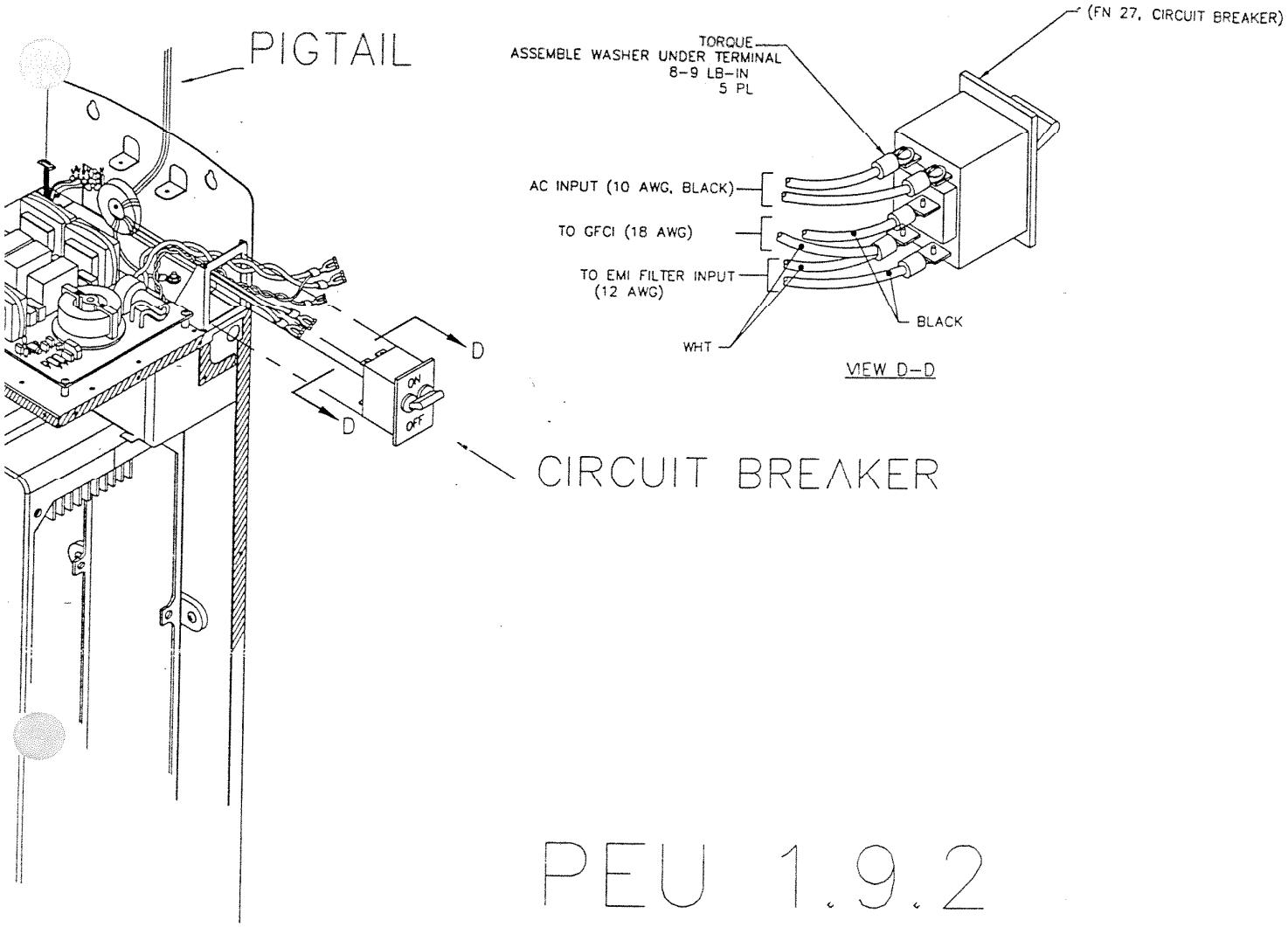

CONDUIT
2 PL
TORQUE 3-5 LB-IN
UPPER SURROUND
HARNESS SHOWN FOR
ILLUSTRATION PURPOSE ONLY
ACTUAL LENGTH NOT SHOWN

FIG. PEU 1.8


PIGTAIL
TORQUE
ASSEMBLE WASHER UNDER TERMINAL
8-9 LB-IN
5 PL
(FN 27, CIRCUIT BREAKER)
AC INPUT (10 AWG, BLACK)
TO GFCI (18 AWG)
TO EMI FILTER INPUT
(12 AWG)
BLACK
WHT
VIEW D-D
D
D
ON
OFF
CIRCUIT BREAKER

PEU 1.9.2

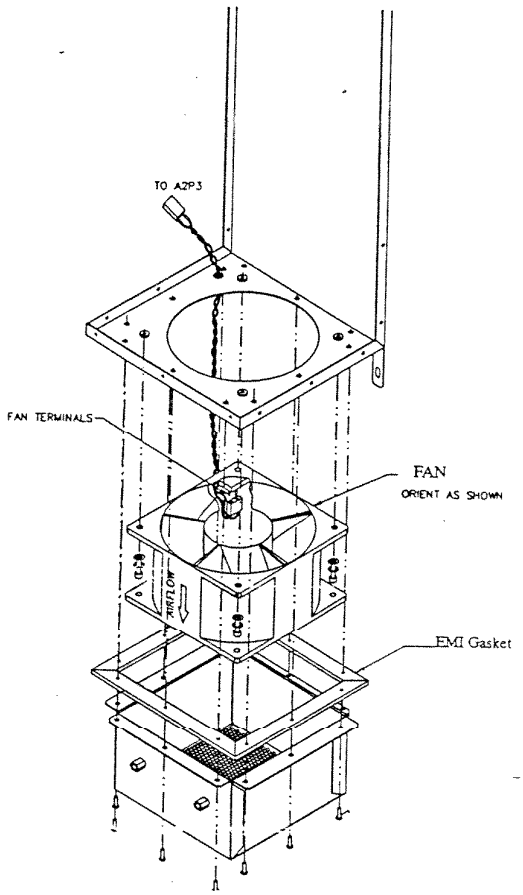
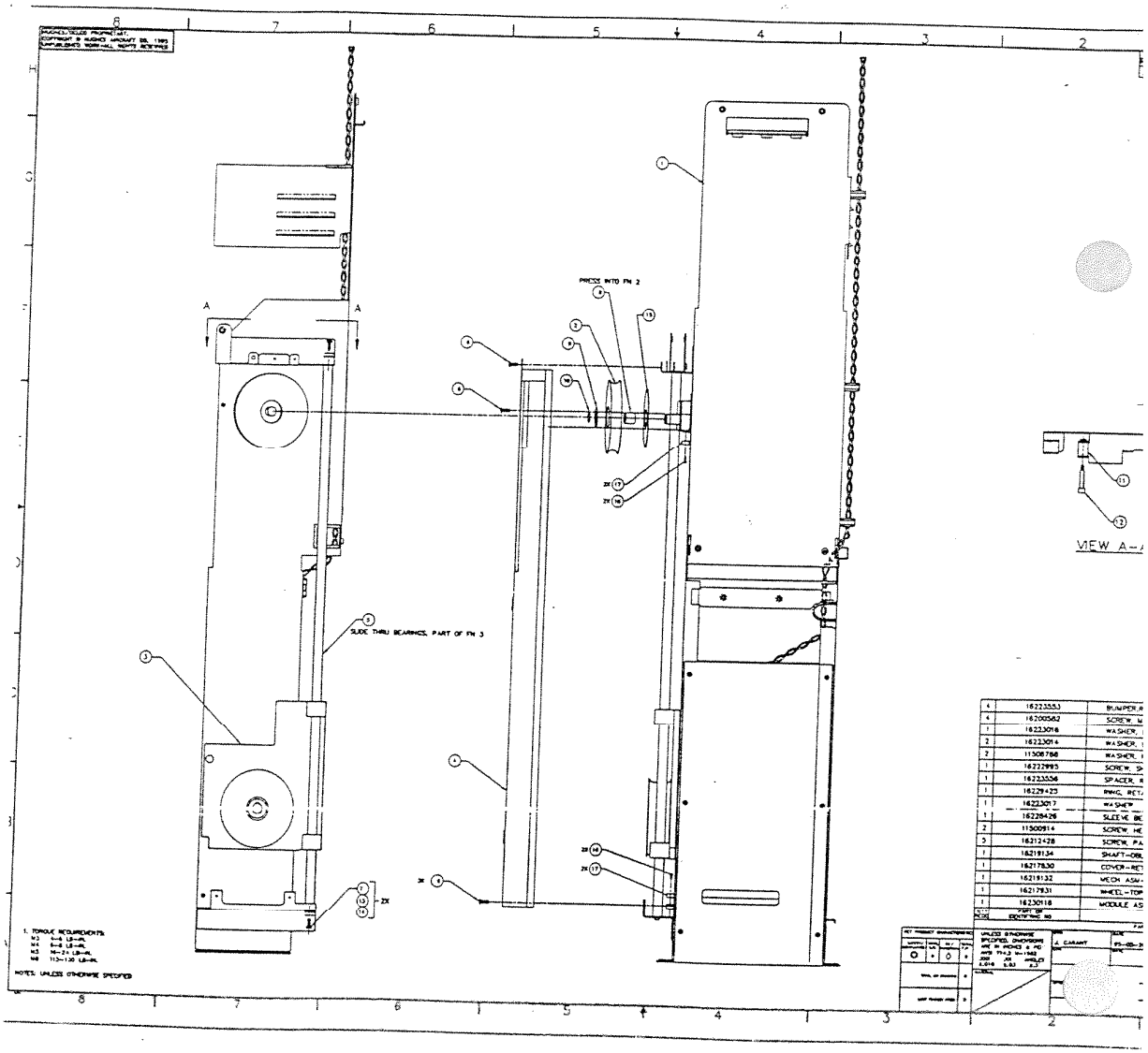
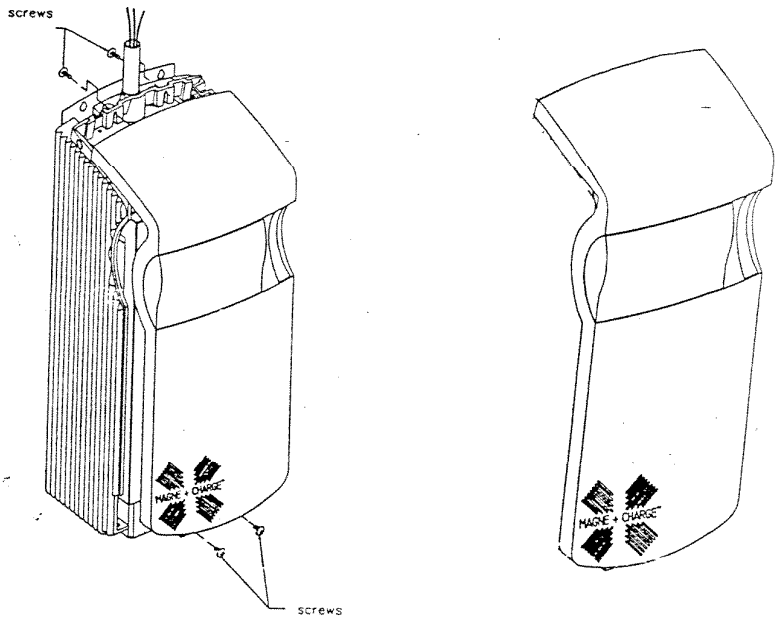

TO A2P3
FAN TERMINALS
FAN
ORIENT AS SHOWN
AIRFLOW
EMI Gasket

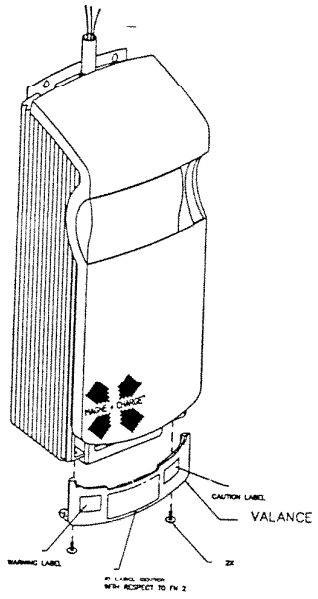
FIG. PEU 1.9.5


PRESS INTO PN 2
SLIDE THRU BEARINGS, PART OF PN 3
VIEW A–A
NOTES: UNLESS OTHERWISE SPECIFIED



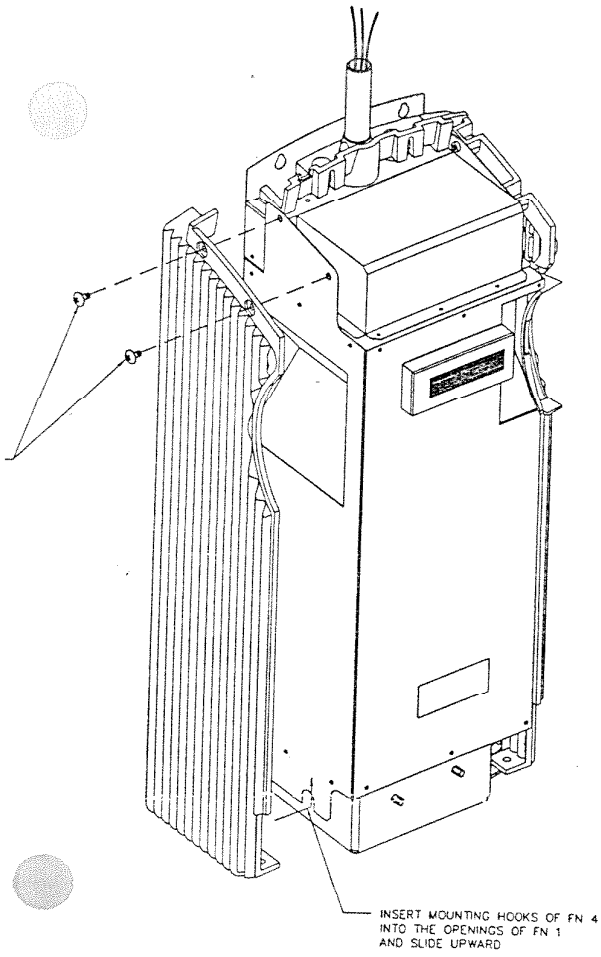
INSTALL FRONT COVER ASSEMBLY

Fig. WM1.2

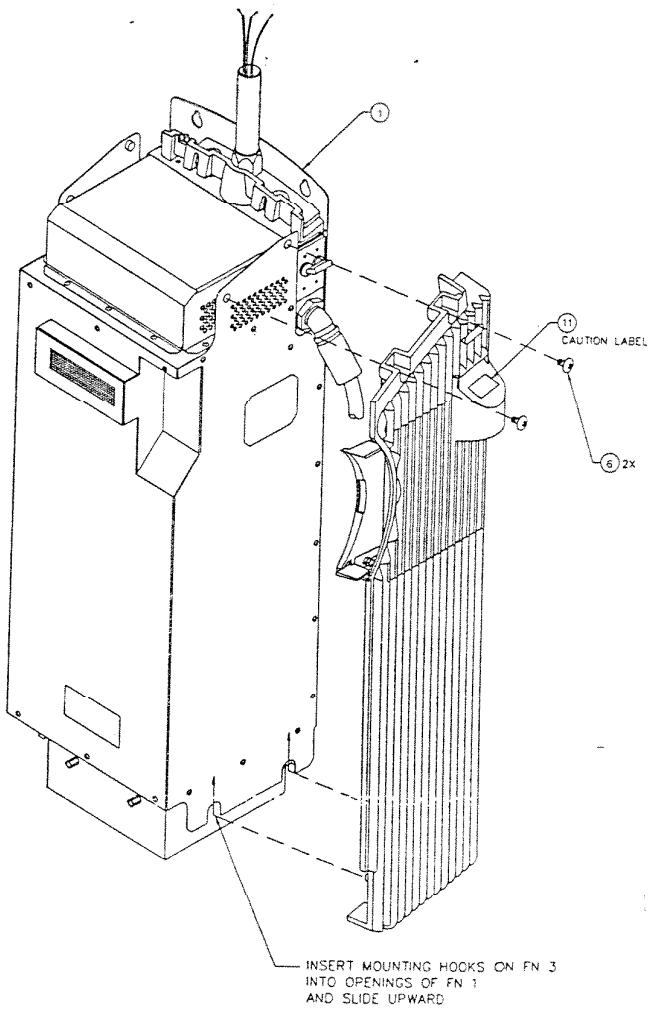


INSTALL VALANCE PANEL

Fig. WM1.3



INSTALL LEFT SIDE PANEL ASSEMBLY



INSTALL RIGHT SIDE PANEL ASSEMBLY

Fig. WM1.4

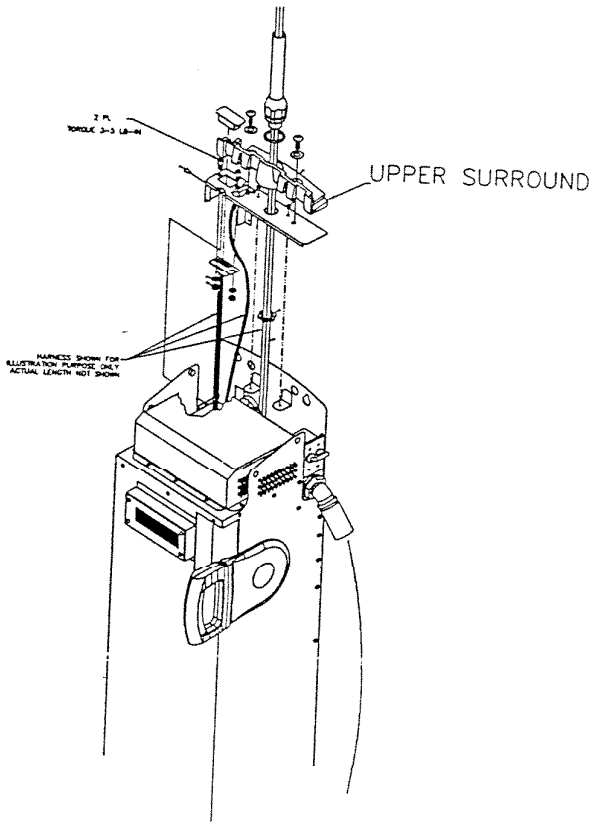
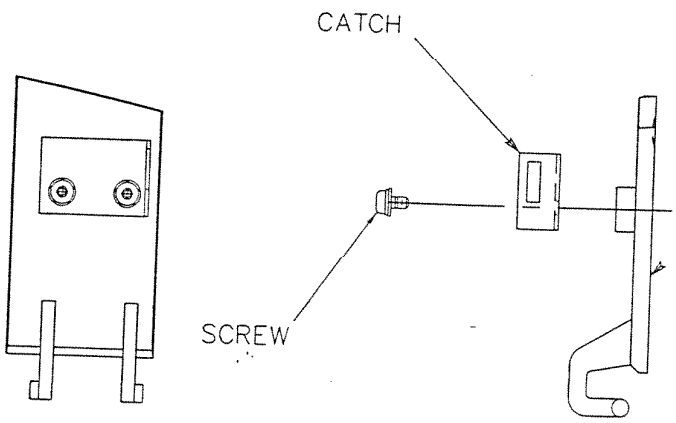


FIG. WM 14.1



CIRCUIT BREAKER DOOR
Fig. FM1.9.1

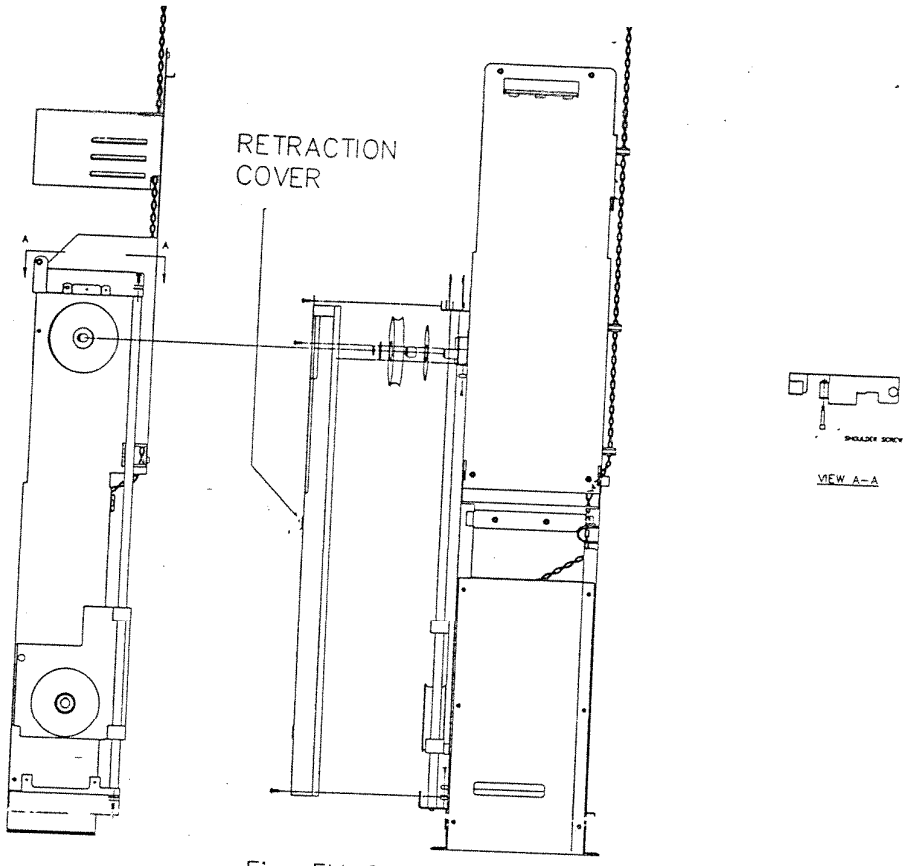


Fig. FM 2.1

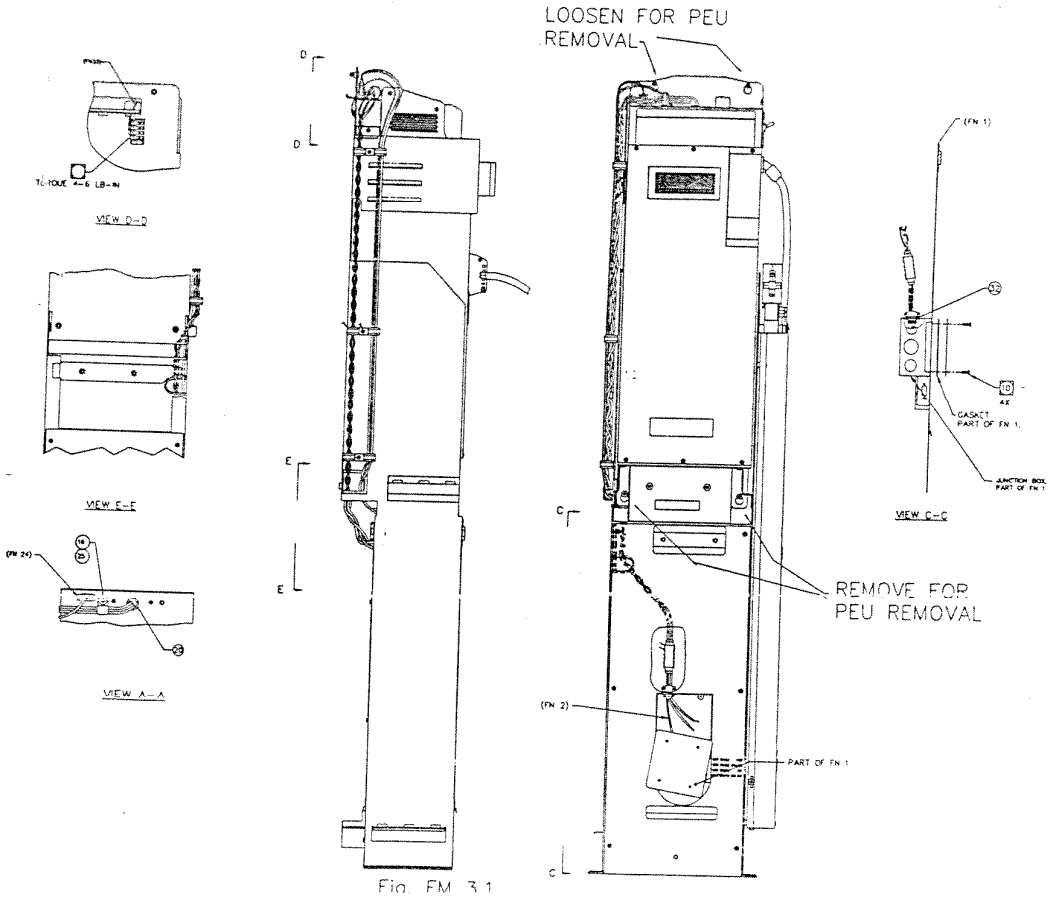

LOOSEN FOR PEU REMOVAL
REMOVE FOR PEU REMOVAL
(FN 1)
(FN 2)
(FN 24)
PART OF FN 1
GASKET PART OF FN 1.
JUNCTION BOX PART OF FN 1
VIEW D-D
VIEW E-E
VIEW A-A
VIEW C-C

Fig. FM 3.1

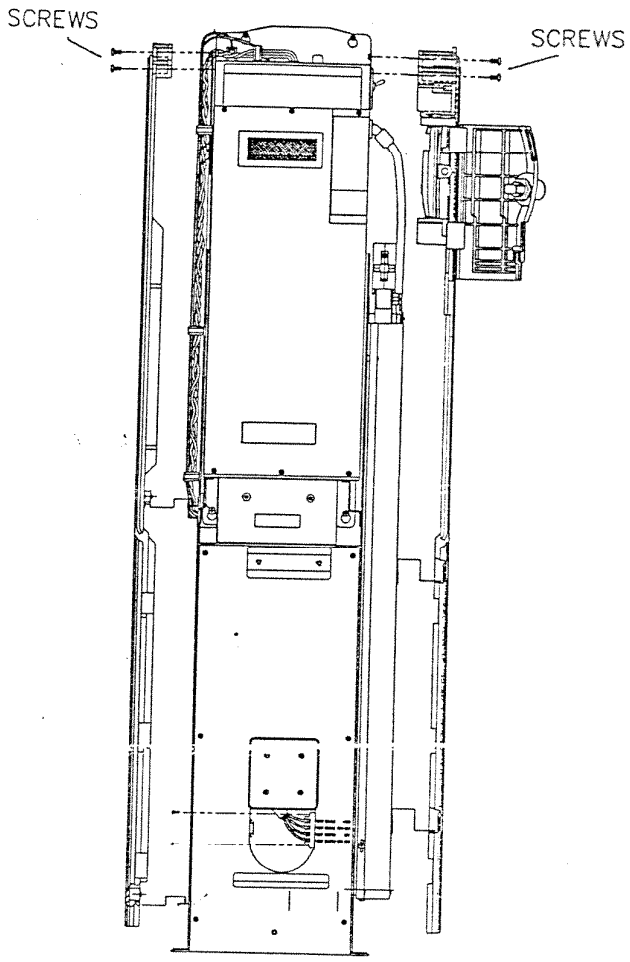
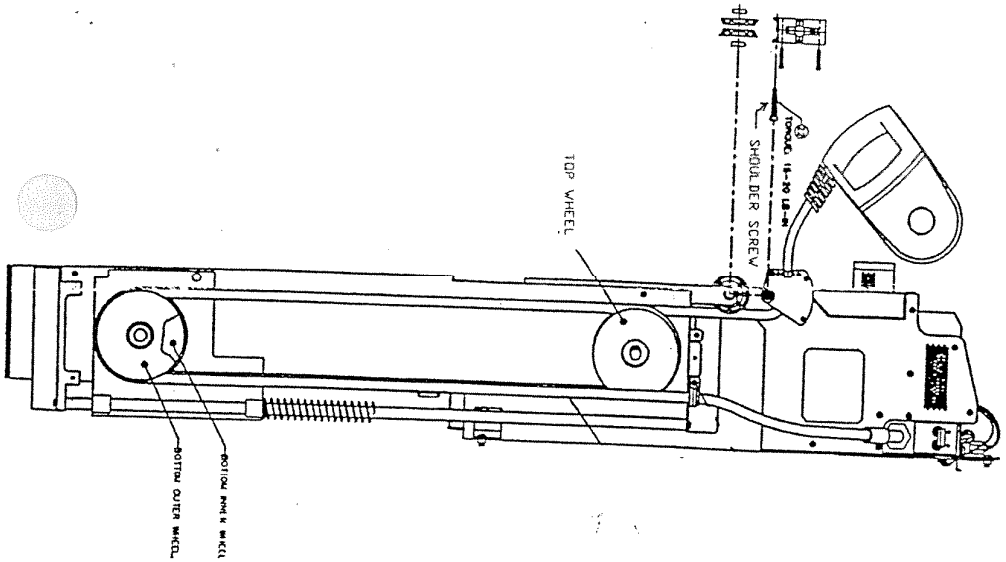


Fig. FM3.2


TOP WHEEL
SHOULDER SCREW
TORQUE: 15-20 LB-IN
BOTTOM OUTER WHEEL
BOTTOM INNER WHEEL

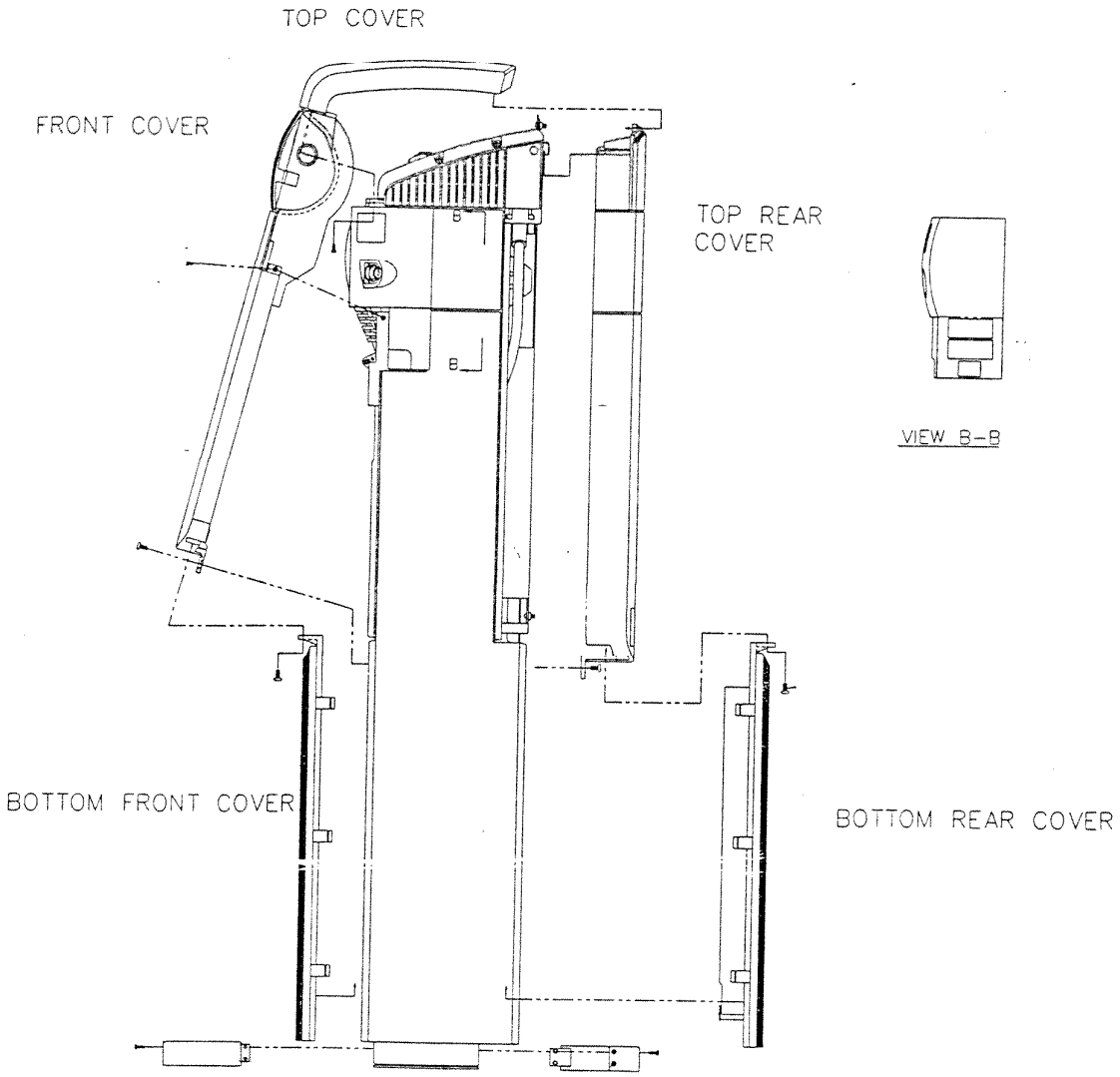

TOP COVER
FRONT COVER
TOP REAR COVER
B
B
VIEW B-B
BOTTOM FRONT COVER
BOTTOM REAR COVER

Fig. FM 1.1

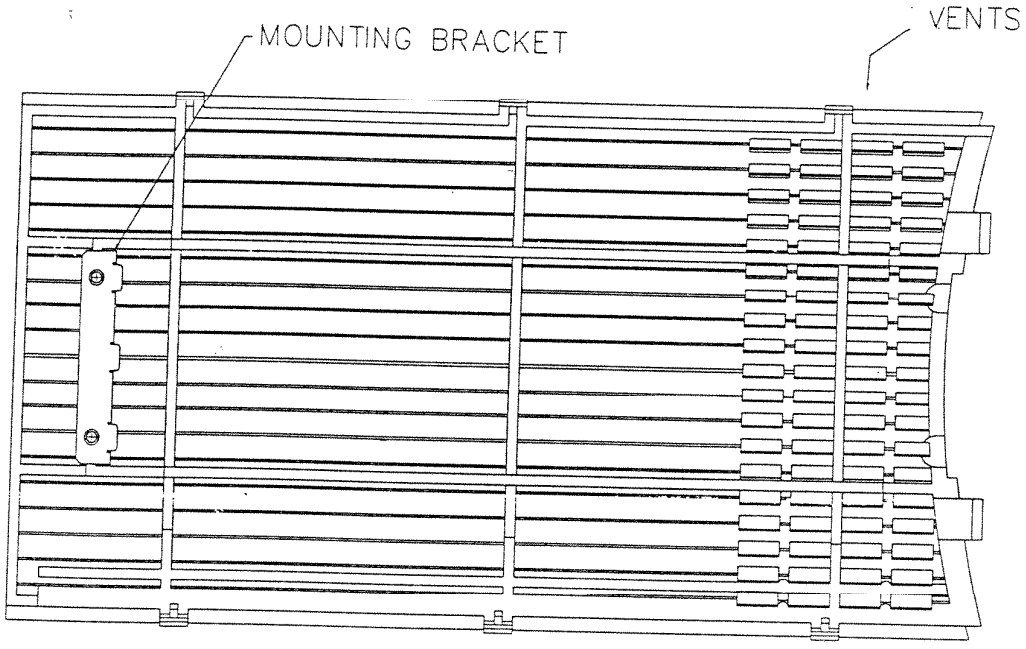
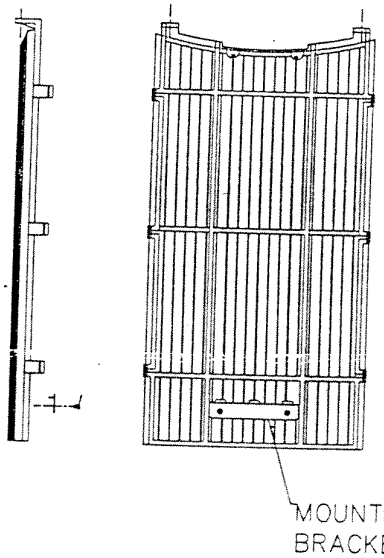


Fig. FM1.5
BOTTOM REAR COVER



BOTTOM FRONT COVER
Fig. FM 1.4

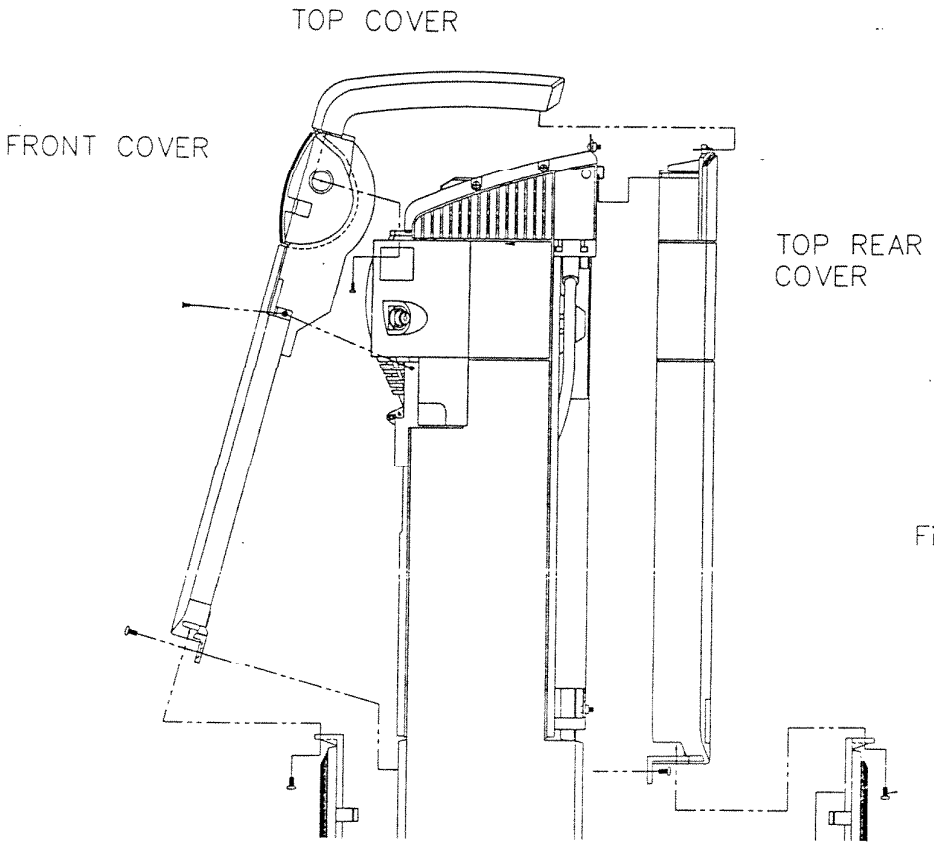


Fig. FM 1.1.1

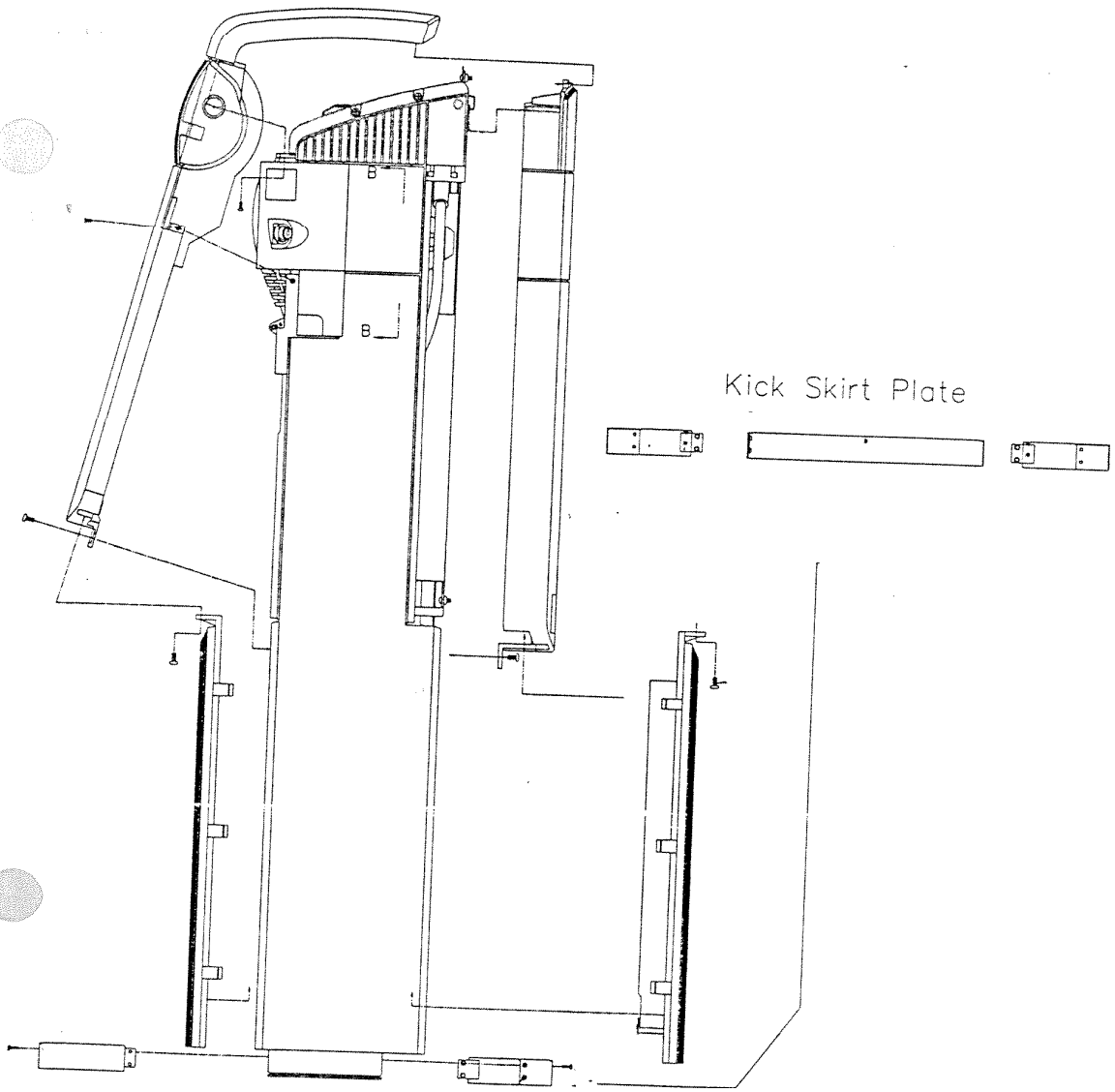
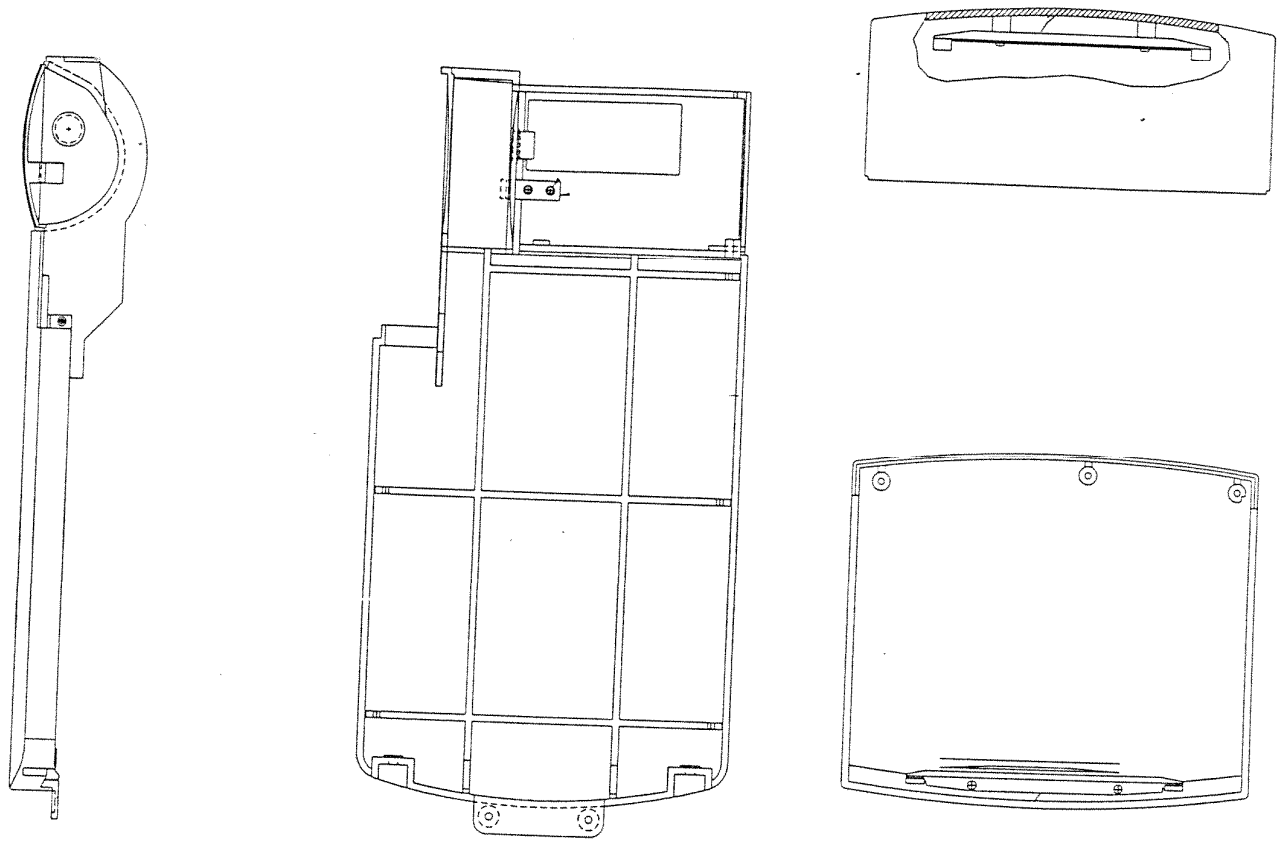


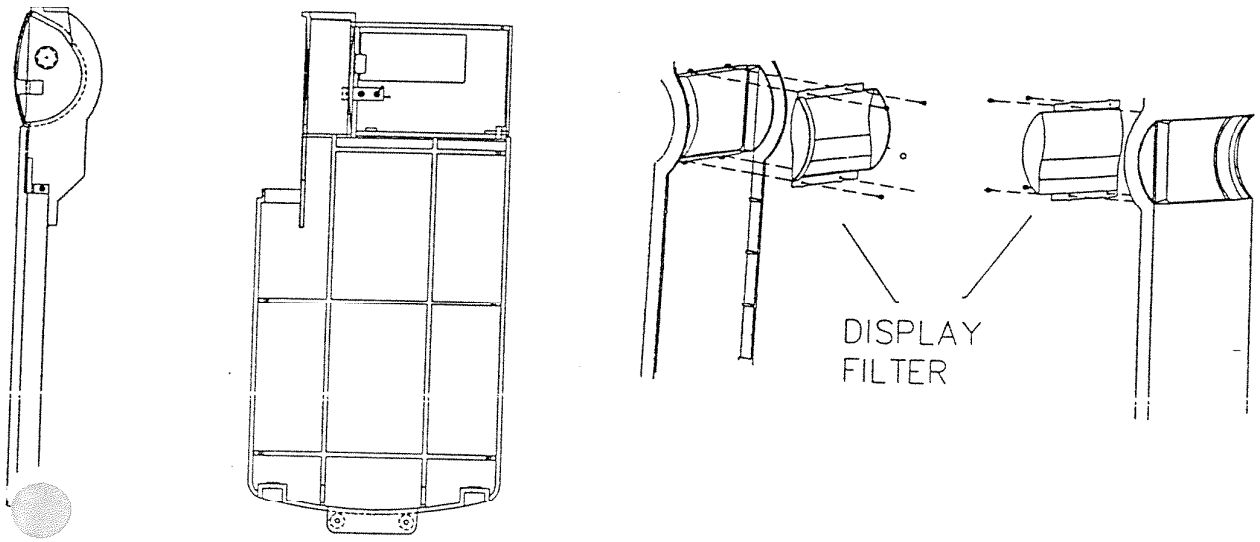
Fig. FM 1.2



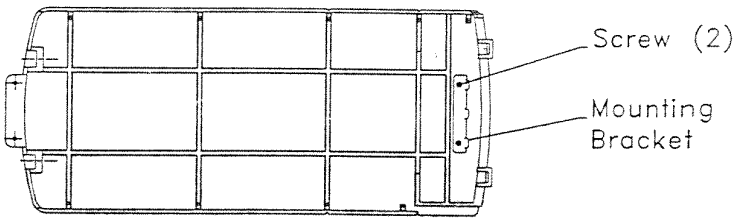
COVER, ASM – TOP

Front Cover ASM 16217935

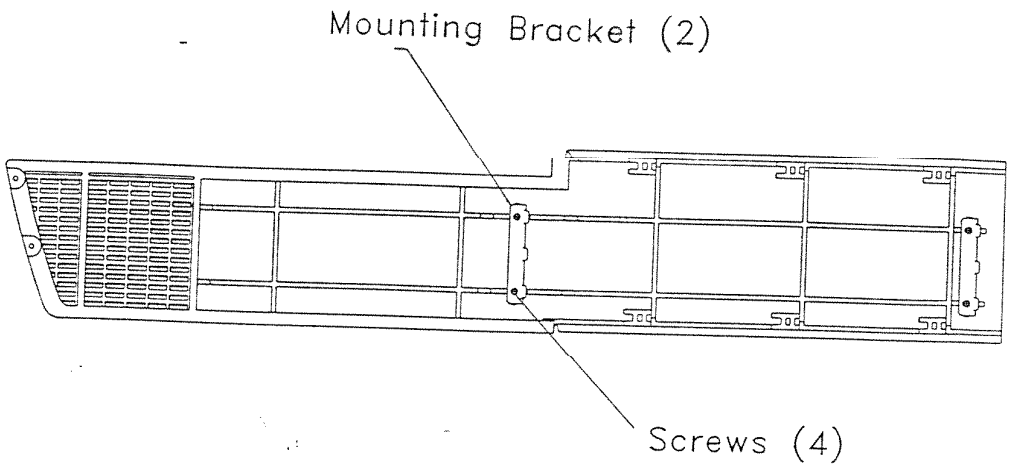
Fig. FM1.6



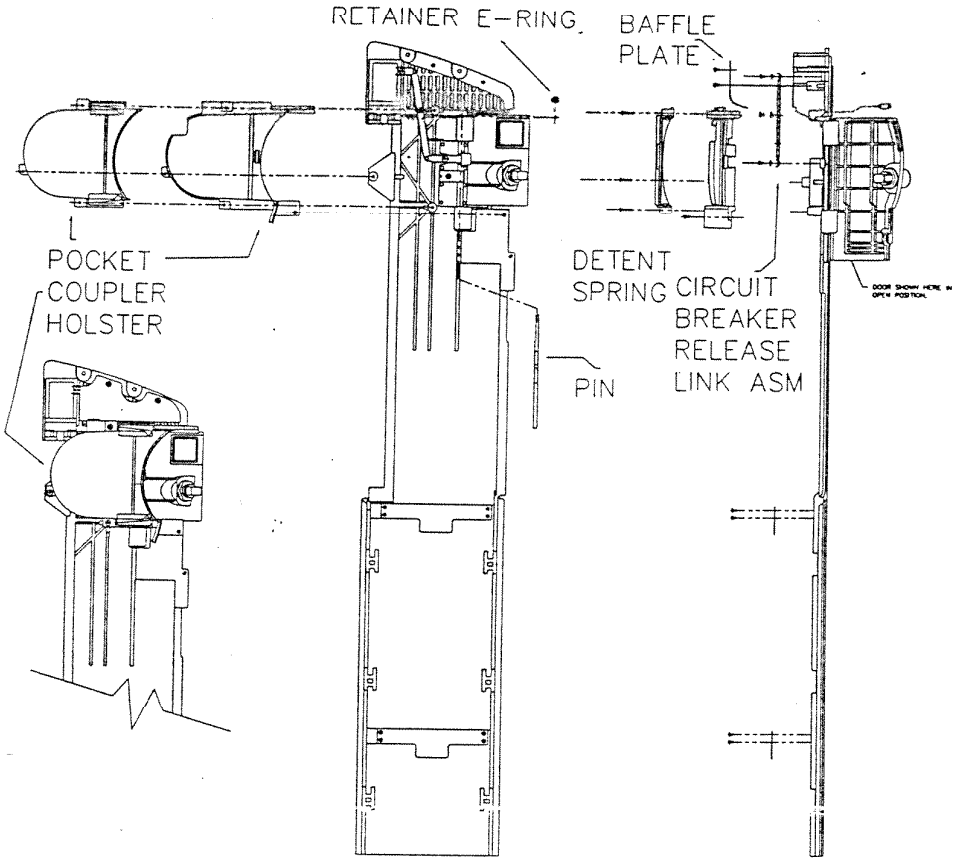
DISPLAY FILTER
Fig. FM 1.6.1



Top Rear cover ASM
16217831 FM 1.8



Left side Panel Assy,
16214168 Fig. FM1.8.1



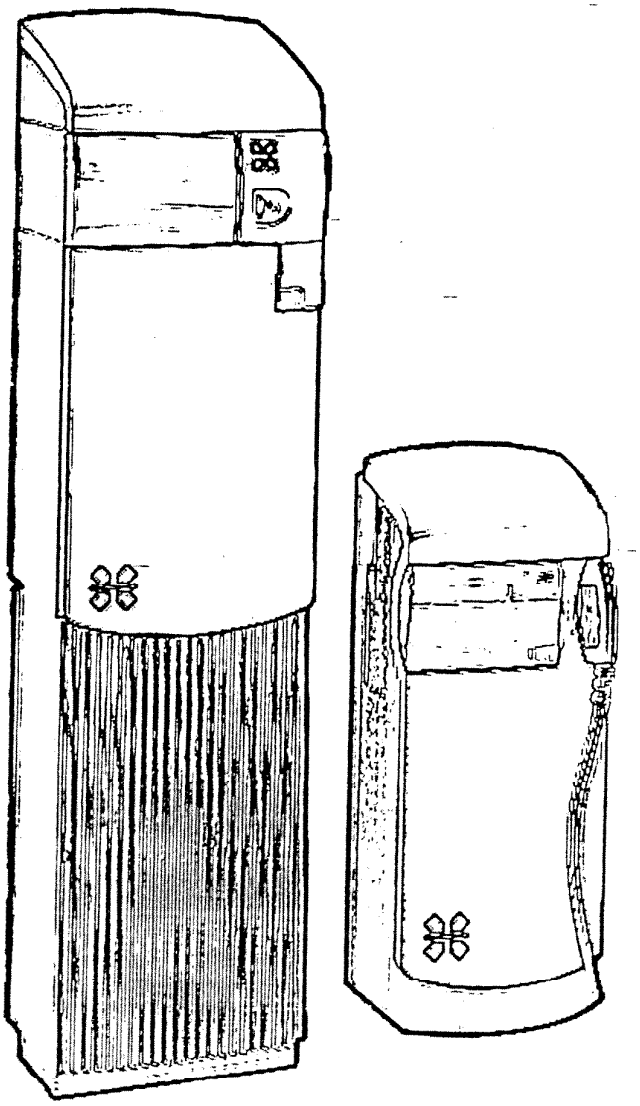
RIGHT SIDE PANEL ASM Fig. FM1.9

SERVICE

MANUAL

SERVICE MANUAL

(Floor and Wall Mount SCM's)



MAGNE CHARGER™

SERVICE MANUAL

Title	Revision
FLOOR MOUNT SCM	1014/97
1. Plastics Removal Procedures	1014/97
2. Retraction Assy Removal & Replacement	1014/97
3. PEU Removal & Replacement	1014/97
4. Replacing Circuit Breaker	1014/97
5. Replacing Pig Tail	1014/97
6. Cleaning the Floor Mount SCM	1014/97
WALL MOUNT SCM	
7. Plastics Removal	1014/97
8. Replacing Circuit Breaker	1014/97
9. Cleaning the Wall Mount SCM	1014/97
Appendix A *(Level 2 Repair Times)*	1014/97

HTSC Document prepared by Hughes Technical Service Company's EV Engineering Support Group

MAGNE CHARGE™

Plastics Removal Procedure

A. Tools Required for Teardown -

1. Torx Driver
2. Torx Driver Extension 12" Length
3. 3mm Allen head tool.
4. Torx Driver
5. Permanent Marker Black
6. Storage bag (for hardware)
7. Retaining Ring pliers
8. Crescent Wrench
9. Diagonal cutting pliers

B. Parts List -

1. Kick Skirt (P/N 16214884)
2. Top Cover (P/N 16214153- Blue)
   (P/N 16251906 G&E)
3. Circuit Breaker Door (P/N 16214181)
4. Left Side Panel (P/N 16214168)
5. Right Side Panel (P/N 16214173)
6. Front Cover (P/N 16214134 -Blue)
   (P/N 16251903 -Gray)
   (P/N 16251909 -Edison)
7. Rear Cover (P/N 16217831 - Blue)
   (P/N 16252272 -Gray)
   (P/N 16255032 -Edison)
8. Bottom Front Cover (P/N 16214195)
9. Bottom Rear Cover (P/N 16214193)
10. Hexhead screws (P/N 16227057)
11. TorxPAN HD MS Screws (P/N 16222985)
12. TORX FLAT HD Screw
    (P/N 16198870)
13. TPAN HD Screw (P/N 16233352)
14. TPH TT Screw (P/N 16212428)

Note: *Turn off source power to Floormount before commencing this procedure.*

Note: Store all plastic pieces together (along with removed hardware). This will ensure the correct plastics go back on the same charger.

C. Kick Skirt

Time: 0.1

1. Remove six (6) Hexhead screws

   Remove six (6) Hexhead screws (P/N 16227057) located at the bottom of the Floor Mount.

Plastics Removal Procedure (Continued)

D. Bottom Front Cover — Time: 0.1

1. Remove two (2) screws (P/N 16222985) from the top of the Bottom Front panel.

   (Refer to Figure FM 1. 4)

2. Slide the panel downward to remove.

3. If necessary remove Mounting Bracket (P/N 16214170) by removing two Phillips head screws.

4. Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics.

5. Orient the Mounting Bracket correctly .

E. Bottom Rear Cover — Time: 0.1

1. Remove two (2) screws (P/N 16222985) from the top of the Bottom Rear panel.

2. Slide the panel downward to remove. If necessary remove Mounting Bracket (P/N 16214170) by removing two Phillips head screws.

3. Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics.

4. Orientate the Mounting Bracket correctly.

F. Front Cover — Time: 0.1

1. Remove two (2) screws (P/N 16222985) from bottom of the Front cover.

2. After opening the Coupler door, remove one (1) screw from the lower right side of the coupler paddle opening.

3. Remove one (1) screw from the upper inside right of the coupler paddle opening.

4. Lift up on Front cover and remove. If necessary remove Top Cover (P/N 1624153) and Top Cover rear Mounting Bracket (P/N 1624163) by removing four Hexhead screws.

5. Remove the Front Cover Mounting Bracket (P/N 16214170) by removing two Hexhead screws.

6. Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics.

7. Orient the Mounting Bracket correctly.

Plastics Removal Procedure (Continued)

G. Top Rear Cover

Time: 0.1

1. Remove two (2) screws (P/N 16222985) from bottom of the Top Rear cover. (Refer to Fig. Fm 1.8)
2. Lift up on Top Rear cover and remove the circuit breaker door on the Right Side Panel will now come out.
3. If necessary remove Mounting Bracket (P/N 16214170) by removing two Hex head screws.
4. Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics.
5. Orient the Mounting Bracket correctly.

H. Left Side Panel

Time: 0.2

1. Remove two (2) screws (P/N 16222985) from the top of the Left Side Panel.
2. Lift up on panel to remove. If necessary remove (2) Mounting Brackets (P/N 16214170) by removing four Hexhead screws.
3. Replace Plastics if necessary and re-attach the Mounting Bracket to the new plastics.
4. Orient the Mounting Bracket correctly.

I. Right Side Panel

Time: 0.2

1. Remove Paddle from the holster.
2. Remove two (2) screws (P/N 16222985) from the top of the Right Side Panel.
3. Lift up on panel to remove. If necessary remove Mounting Bracket (P/N 16214173) by removing two Phillips head screws.
4. Replace Plastics If necessary and re-attach the Mounting Bracket to the new plastics.
5. Orient the Mounting Bracket correctly.
6. To replace Right Side Panel components reference section C. 'Plastics replacement' step 3.

Plastics Removal Procedure (Continued)

J. PEU Removal from Floor Mount Frame/Chassis: Time: 0.4

1. Perform section III.

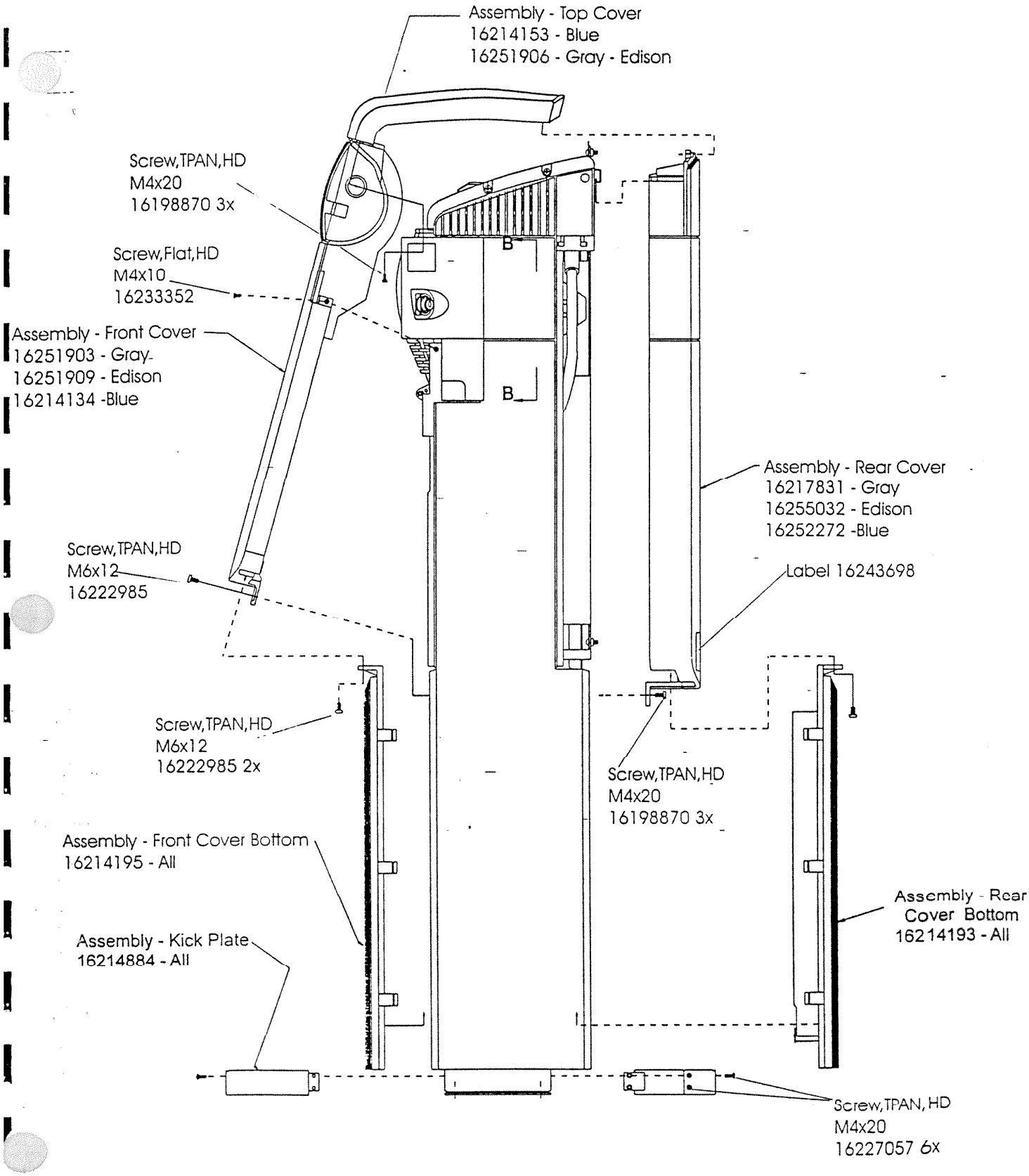
'Plastics Removal Procedure' to access the retraction Assy. (Time: 0.2)

K. Coupler Cable Extraction:

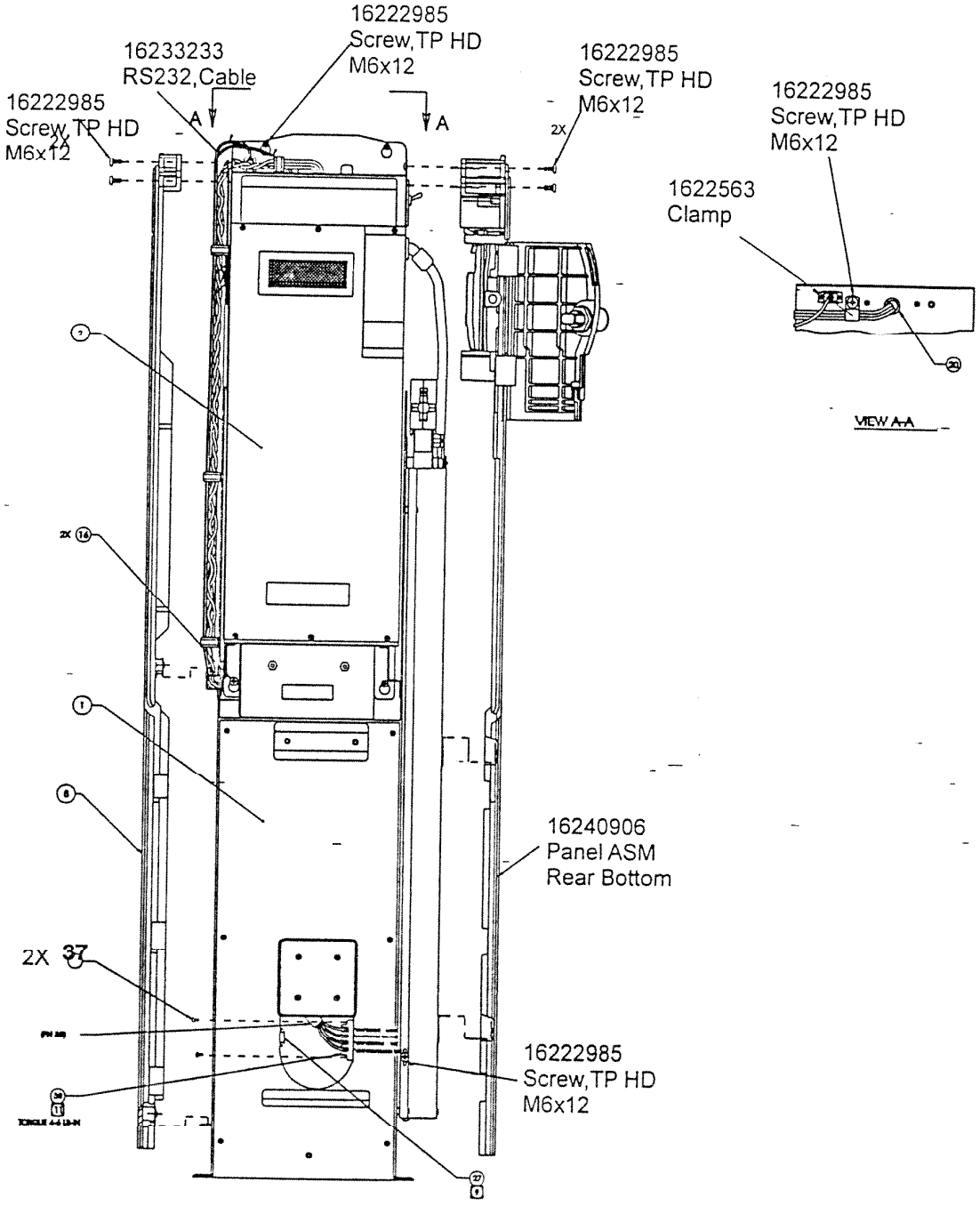
1. Remove five (5) screws (P/N 16212428) from Retraction cover (P/N 16217830).
2. Remove cover .
3. Remove Shoulder Screw (P/N 162307960) from the Pulley Wheel assembly of Output Cable on Paddle end .(Refer to Figure FM 2.1)
4. Remove Clamp Screw (P/N 16198864).
5. Carefully disengage Output Cable from Retraction Assy pulleys.

L. Power Cable removal and Vent Control Cable/RS-232 Cable disconnect:

1. Remove four (4) Screws from the AC Junction Box Cover Plate.
2. Disconnect the three AC Power lines from the Source power.
3. Loosen Cable and feed through hole, Clamp at the top of the AC Junction Box.
4. Remove three (3) Nuts (P/N 16148279), from the cable retaining clamps, on the left side of the SCM Frame ASM.
5. Starting at the AC Junction Box, carefully reroute the AC Power Lines (two black, one green), out from the chassis, and back through the three clamps.
6. Locate the Vent Control Terminal at the top rear of the SCM. Loosen the four terminal lugs and remove the Vent control wires.
7. Locate the RS-232 connector at the top of the PEU. Loosen the two Hex head screws, and remove the connector.


Assembly - Top Cover
16214153 - Blue
16251906 - Gray - Edison
Screw,TPAN,HD
M4x20
16198870 3x
Screw,Flat,HD
M4x10
16233352
Assembly - Front Cover
16251903 - Gray
16251909 - Edison
16214134 -Blue
B
B
Assembly - Rear Cover
16217831 - Gray
16255032 - Edison
16252272 -Blue
Label 16243698
Screw,TPAN,HD
M6x12
16222985
Screw,TPAN,HD
M6x12
16222985 2x
Screw,TPAN,HD
M4x20
16198870 3x
Assembly - Front Cover Bottom
16214195 - All
Assembly - Rear
Cover Bottom
16214193 - All
Assembly - Kick Plate
16214884 - All
Screw,TPAN,HD
M4x20
16227057 6x

FM Plastics


16222985
Screw,TP HD
M6x12
16233233
RS232,Cable
16222985
Screw,TP HD
M6x12
16222985
Screw,TP HD
M6x12
16222985
Screw,TP HD
M6x12
1622563
Clamp
VIEW A-A
16240906
Panel ASM
Rear Bottom
2X 37
16222985
Screw,TP HD
M6x12

Retraction Assy Removal and Replacement

A. Tools Required -

(1) Retaining Ring Pliers

(2) Torx Driver

(3) Crescent Wrench

(4) 3mm Allen

B. Parts List -

(1) Bumper , Rubber (P/N 16222553)

(2) Screw, M3 x 8 (P/N 16200582)

(3) Washer, Large, Teflon (P/N 16223016)

(4) Washer, Lock, M8 (P/N 16223014)

(5) Washer, Flat, M8 (P/N 11508788)

(6) Screw, Shoulder, M5 (P/N 16222995)

(7) Spacer, Round (P/N 16223556)

(8) Ring, Retaining (P/N 16229425)

(9) Washer (P/N 16223017)

(10) Sleeve Bearing (P/N 16228426)

(11) Screw, Hex HD, M8x12 (P/N 11500914)

(12) Screw, Pan HD, M4x6 (P/N 16212428)

(13) Shaft, DBL Retraction (P/N 16219134)

(14) Cover - Retraction (P/N 16217830)

(15) Mech ASM - DBL Wheel (P/N 16219132)

(16) Wheel - Top Retraction (P/N 16217931)

(17) Bearing (P/N 16228428)

C. Retraction Assembly Removal

Time: 0.4

D. Perform "Plastics Removal" Procedure.

(Time: 0.2)

E. Paddle Cable Extraction:

(1) Remove five (5) screws (P/N 16212428) from Retraction cover (P/N 16217830).

(2) Remove cover.

(3) Remove Shoulder Screw (P/N 16222995) from the Pulley Wheel assembly of Output Cable on Paddle end.

(4) Remove Clamp Screw (P/N 16198864).

(5) Carefully disengage Output Cable from Retraction Assy pulleys.

Retraction Assy Removal and Replacement (continued)

F. Retraction Assy - Top Wheel Replacement:

(1) Remove Retaining Ring (P/N 16229425) on Top Wheel (P/N 16217931).

(2) Remove Wheel, Washer (P/N 16223017), Sleeve Bearing (P/N 16228426) , and Washer, Large, Teflon (P/N 16223016) .

(3) Replace Wheel, Washer (P/N 16223017), Sleeve Bearing (P/N 16228426) , and Washer, Large, Teflon (P/N 16223016) .

G. Double Wheel Assy (P/N 162191132) and Shaft Replacement:

(1) Remove (2) bolts (P/N 11500914), remove DBL retraction shaft. If necessary, replace Shaft and re-assemble Retraction Assy.

(2) Remove (1) DBL Wheel Mechanical Assy. Replace or Repair Assy as required.

Note: This section is for sub-components replacement of the DBL Wheel Mech Assy:

(3) Remove (2) Linear Retraction Bearings (P/N 16231361). Press in replacement parts. Re-install Assy on shaft and re-assemble Retraction Assy.

(4) (The following steps do not require the DBL Wheel Mech Assy. to be-removed from the Retraction Shaft.)

(5) Remove Stem Bumpers (P/N 16228440), install new components.

(6) Remove Retaining Ring (P/N 16223555), Remove Teflon washer (P/N 16223017), Bottom Inner and Outer Retraction Wheels, and (2) Teflon washers (P/N 16223016). Replace Sleeve Bearing by pressing it into the appropriate wheel.

(7) Use Sleeve Bearing (P/N 16228426) for the Inner Wheel.

(8) Use Sleeve Bearing (P/N 16228427) for the Outer Wheel.

(9) Re-install Assy on shaft and re-assemble Retraction Assy.

H. Paddle Cable Replacement:

(1) Remove Cover - Retraction, from Frame Assemble.

(2) Starting from the right side of the retraction assembly, route the cable CW around the bottom outer wheel.

(3) Continue routing the cable CW around the top wheel.

(4) Continuing CW, thread the Coupler Paddle between the cable and the chassis to facilitate routing the cable around the bottom inner wheel.

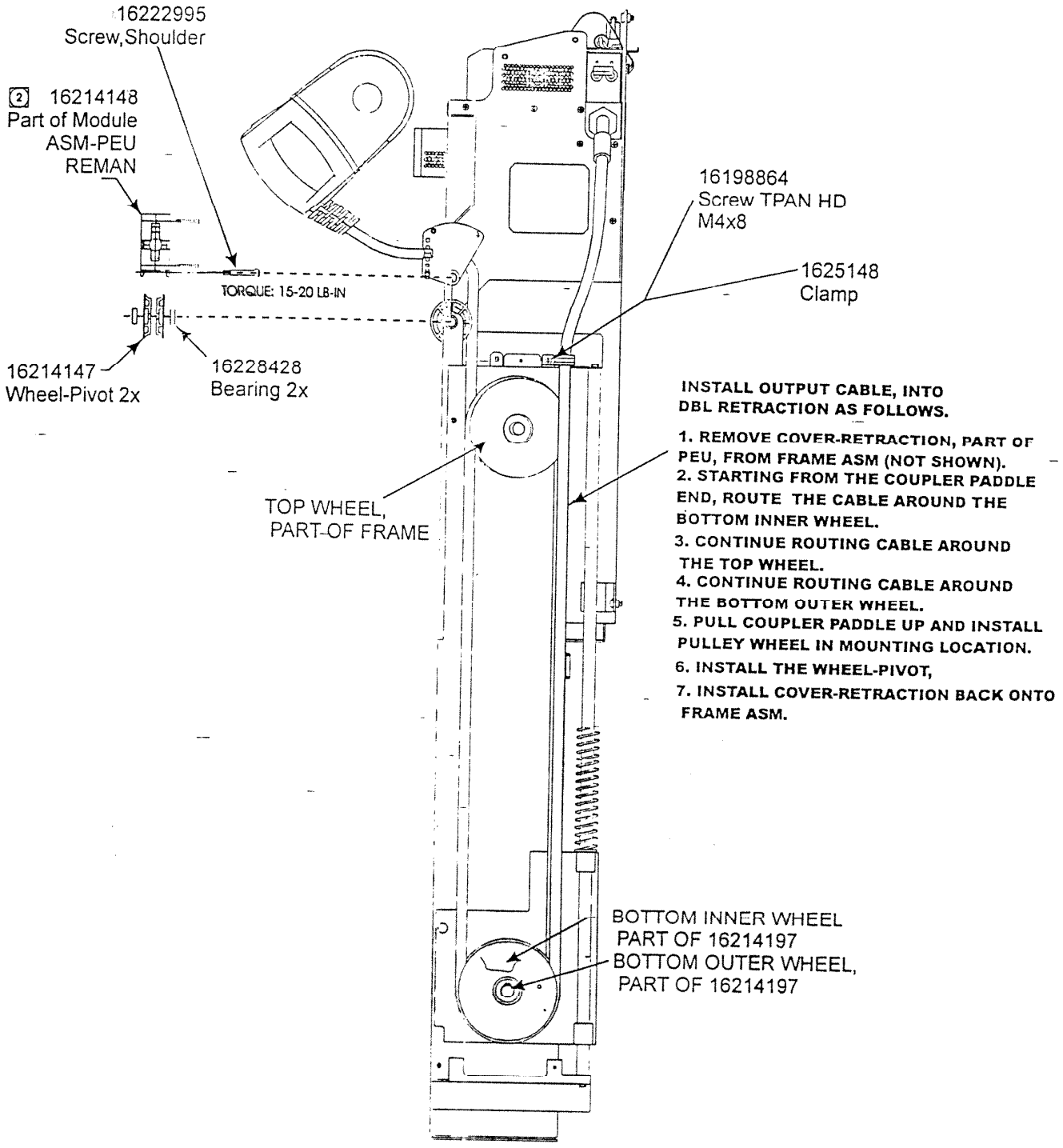
Retraction Assy Removal and Replacement (continued)

Note: *Lift the Double Wheel Assy. to facilitate routing the cable around the bottom pulleys.*

(5) Pull Coupler Paddle up and install Pulley Wheel (Part of Coupler Paddle ASM).

(6) Install the Wheel - Pivot (P/N 16214147), Bearing (P/N16228428), and Shoulder Screw (P/N 16222995).

(7) Install Cover - Retraction back onto Frame ASM.



INSTALL OUTPUT CABLE, INTO DBL RETRACTION AS FOLLOWS.

1. **REMOVE COVER-RETRACTION, PART OF PEU, FROM FRAME ASM (NOT SHOWN).**
2. **STARTING FROM THE COUPLER PADDLE END, ROUTE THE CABLE AROUND THE BOTTOM INNER WHEEL.**
3. **CONTINUE ROUTING CABLE AROUND THE TOP WHEEL.**
4. **CONTINUE ROUTING CABLE AROUND THE BOTTOM OUTER WHEEL.**
5. **PULL COUPLER PADDLE UP AND INSTALL PULLEY WHEEL IN MOUNTING LOCATION.**
6. **INSTALL THE WHEEL-PIVOT,**
7. **INSTALL COVER-RETRACTION BACK ONTO FRAME ASM.**

FM RETRACTION ASSEMBLY Sheet1

10 INSTALL CABLE TERMINAL LUGS USING SCREWS PROVIDED WITH TERMINAL BLOCK LOCATED IN PEU. WIRE LOCATION FROM TOP TO BOTTOM; RED, BLACK, WHITE, WHITE.

9 CONNECT FEMALE END OF THE CONNECTOR TO THE PEU PEU AND ROUTE CABLE ALONG SIDE INPUT CABLES. CLAMP CABLE 3 PLACES AND CONNECT MALE END TO BRACKET IN THE FRAME ASSY. ATTACH FN 27 TO CONNECTOR.

8 TERMINAL BLOCK INSTALL CABLE TERMINAL LUGS USING SCREWS PROVIDED

7 ATTACH LABEL ON NON-TEXTURED PAINTED SURFACE.

6 PULL OUTPUT CABLE UP TO ALIGN THE MOUNTING HOLE ON THE DBL RET PLATE WITH THE SCREW,

5 SCREW TO BE USED TO HOLD DBL RET PLATE DOWN DURING SHIPPING ONLY AND IS TO BE REMOVED AFTER PERMANENT INSTALLATION AT MOUNTING SITE.

4 REMOVE SCREWS ON FRONT PLATE TO INSTALL CABLE AND CLAMP

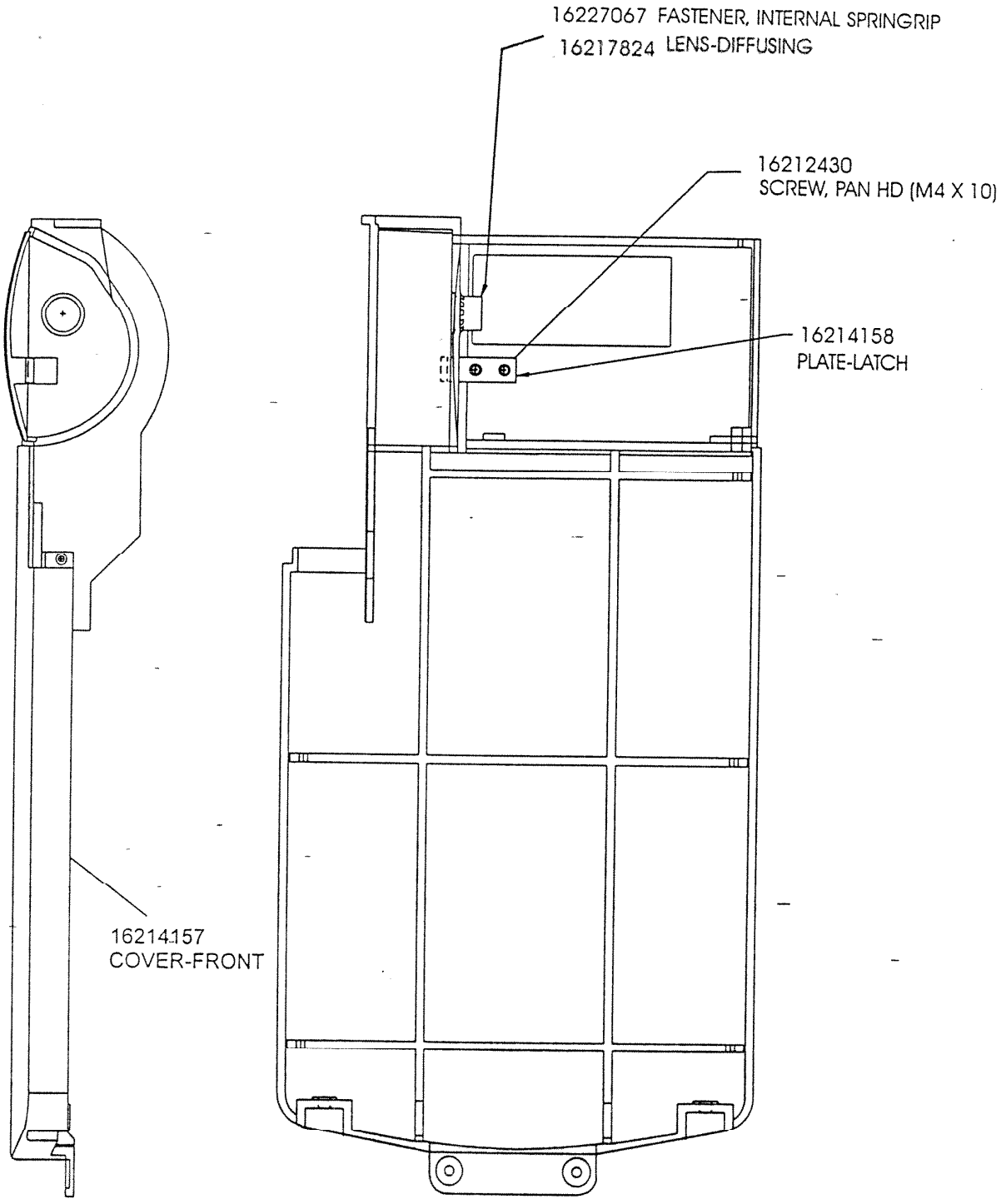
3. SPECIFIED SCREWS MAY BE PURCHASED FROM McMASTER/CARR OR WITH EQUIVALENT SUBSTITUTES.

2 ASSEMBLE PULLEY WHEEL AROUND OUTPUT CABLE.

TORQUE REQUIREMENTS:

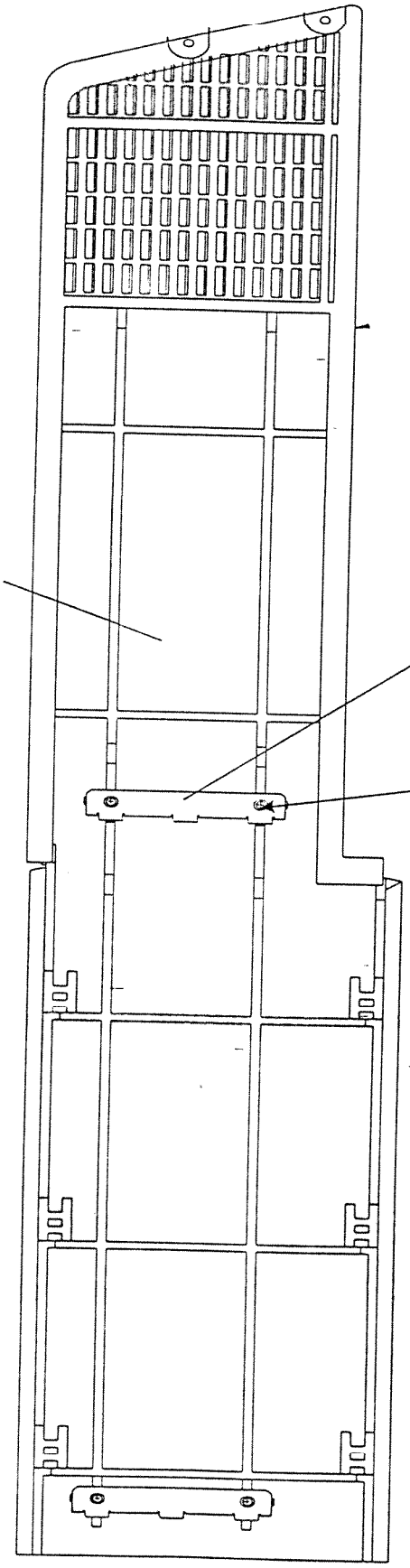
M4 : 6-8 LB-IN.
M5 : 15-20 LB-IN.
M6 : 40-50 LB-IN.
5-40 : 4-6 LB-IN.
6-32 : 6-8 LB-IN.

FM RETRACTION ASSEMBLY Sheet2



TORQUE REQUIREMENTS:
M4 : 6-8 LB-IN.

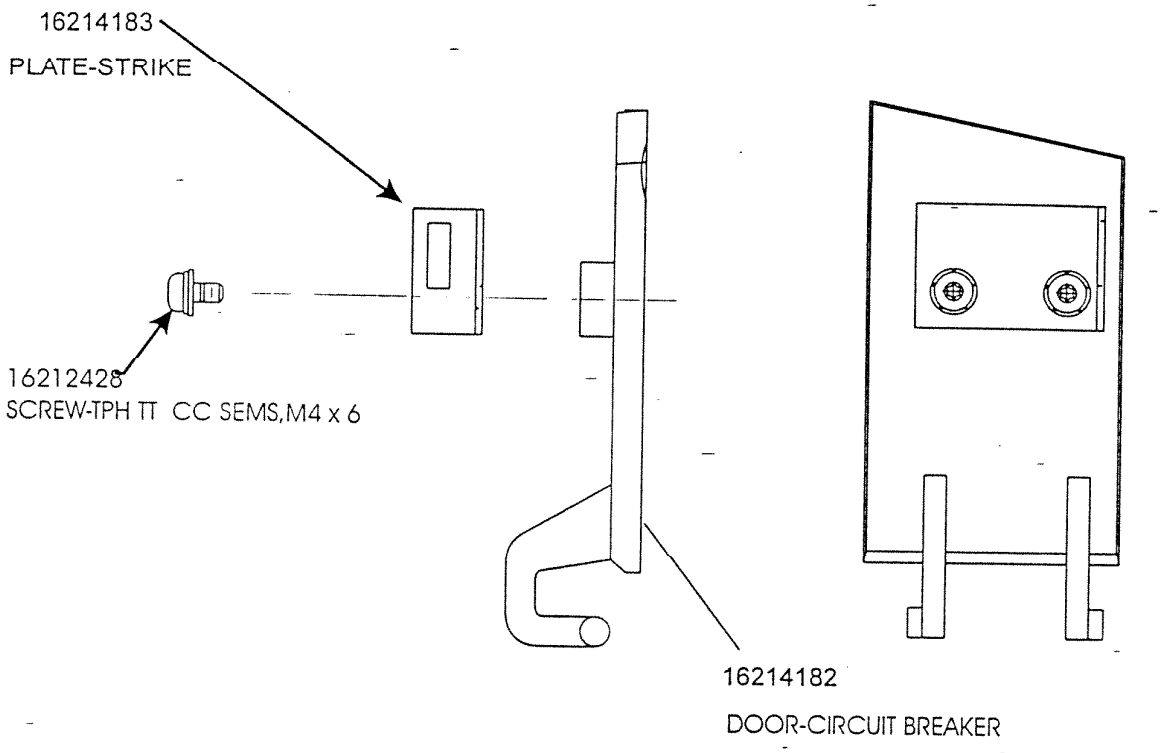
FM FRONT COVER



SPECIFIED SCREWS MAY BE REPLACED WITH EQUIVALENT SUBSTITUTES.

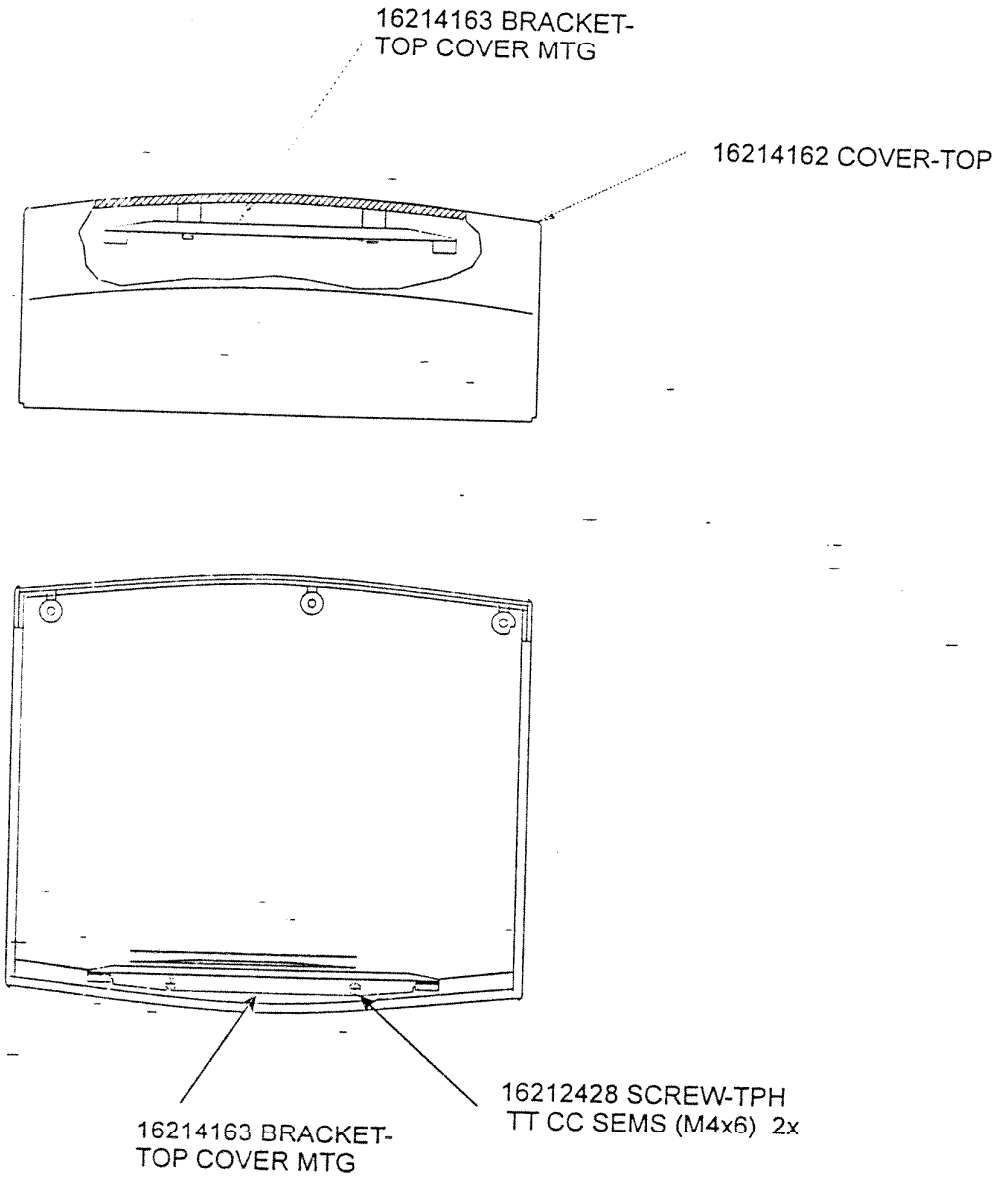
TORQUE REQUIREMENTS: M4 6-8 LB-IN.

FM - Panel Left Side



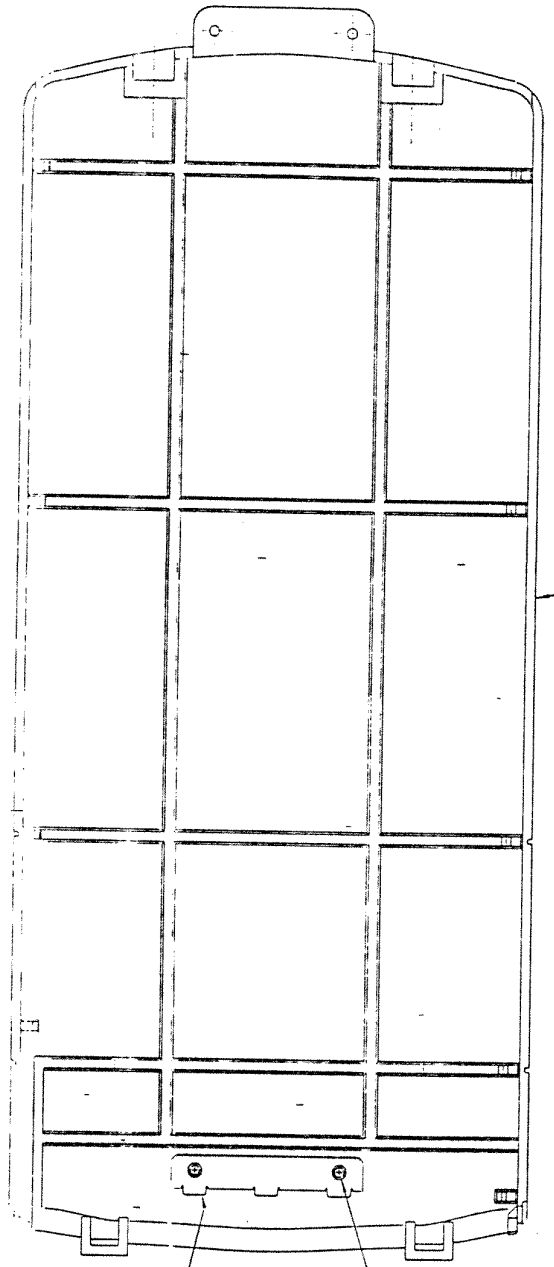
TORQUE REQUIREMENTS: M4 6-8 LB-IN.

FM Circuit Breaker Door



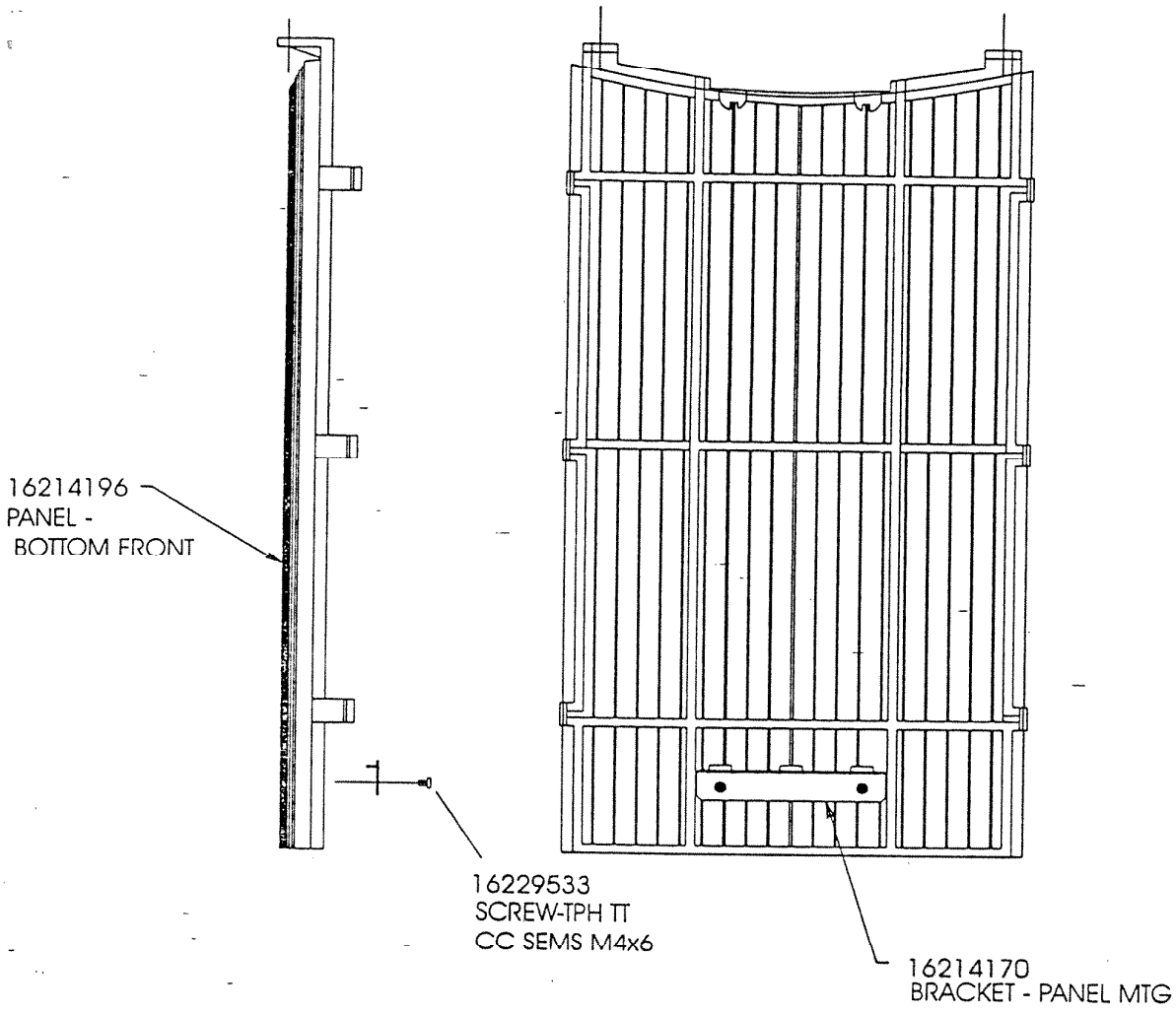
TORQUE REQUIREMENTS: M4 6-8 LB-IN.
SPECIFIED SCREWS MAY BE REPLACED
WITH EQUIVALENT SUBSTITUTES.

FM TOP COVER



TORQUE REQUIREMENTS: M4 6-8 LB-IN
SPECIFIED SCREWS MAY BE REPLACED WITH
EQUIVALENT SUBSTITUTES.

FM TOP
BACK COVER



TORQUE REQUIREMENTS: M4 6-8 LB-IN.

SPECIFIED SCREWS MAY BE REPLACED WITH EQUIVALENT SUBSTITUTES.

FM FRONT BOTTOM COVER

Floor Mount - Replacing Damaged Plastics

A. Tools Required -

(1) Torx Driver

(2) Length Torx extension.

(3) Torx bit

(4) Torx Driver

(5) 3mm Allen head tool.

B. Parts List -

(1) Top Front (P/N16214134 - Blue)
(P/N 16251903 - Gray)
(P/N 16251909 - Edison)

(2) Circuit Breaker Door (P/N 16214181)

(3) Left Side Panel (P/N 16214168)

(4) Right Side Panel (P/N 16214171)

(5) Rear Cover (P/N 16217831)

(6) Hexhead screws (P/N 16227057)

(7) TPAN HD MS Screws (P/N 16222985)

(8) TORX FLAT HD Screw (P/N 16198870)

(9) TPAN HD

(10) Screw (P/N 16233352)

C. PLASTICS SUBASSEMBLIES REPLACEMENT

For steps on how to remove plastic pieces 1 through 9 in the above Parts List, refer to "Plastics Removal" procedures. Refer to the appropriate drawing for the correct orientation of the mounting brackets.

D. TO REPLACE FILTER - DISPLAY (P/N 16217934) Time: 0.1

(1) Remove Front Cover.

(2) Remove four (4) screws (P/N 16213583), from top and bottom of Filter -Display, FM (P/N 16217934).

(3) Remove filter and replace with new piece and Reassemble.

Floor Mount - Replacing Damaged Plastics (Continued)

E. TO REPLACE RIGHT SIDE PANEL COMPONENTS - Time: 0.2

(1) Remove Right Side Panel.

(2) Remove four Hexhead Screws from the Pocket Coupler Assy (P/N 16214174), three from the top half and one from the bottom half.

(3) Remove two Hexhead Screws from the Baffle Plate (P/N 16218073).

(4) Remove three Hexhead Screws and one Extension Spring (P/N 16229428) from the Circuit Breaker door release Link ASM (P/N 16214175).

(5) Remove (1) Retainer - E Ring (P/N 16231473) from the top of the Coupler Door Pin (P/N 16214190), remove Pin.

(6) Remove one Phillips head Screws from the door Detent Spring (P/N 16217836).

(7) Remove Coupler Door (P/N 16214184).

(8) If necessary replace or repair components. Re-assemble components in the

(9) following order:

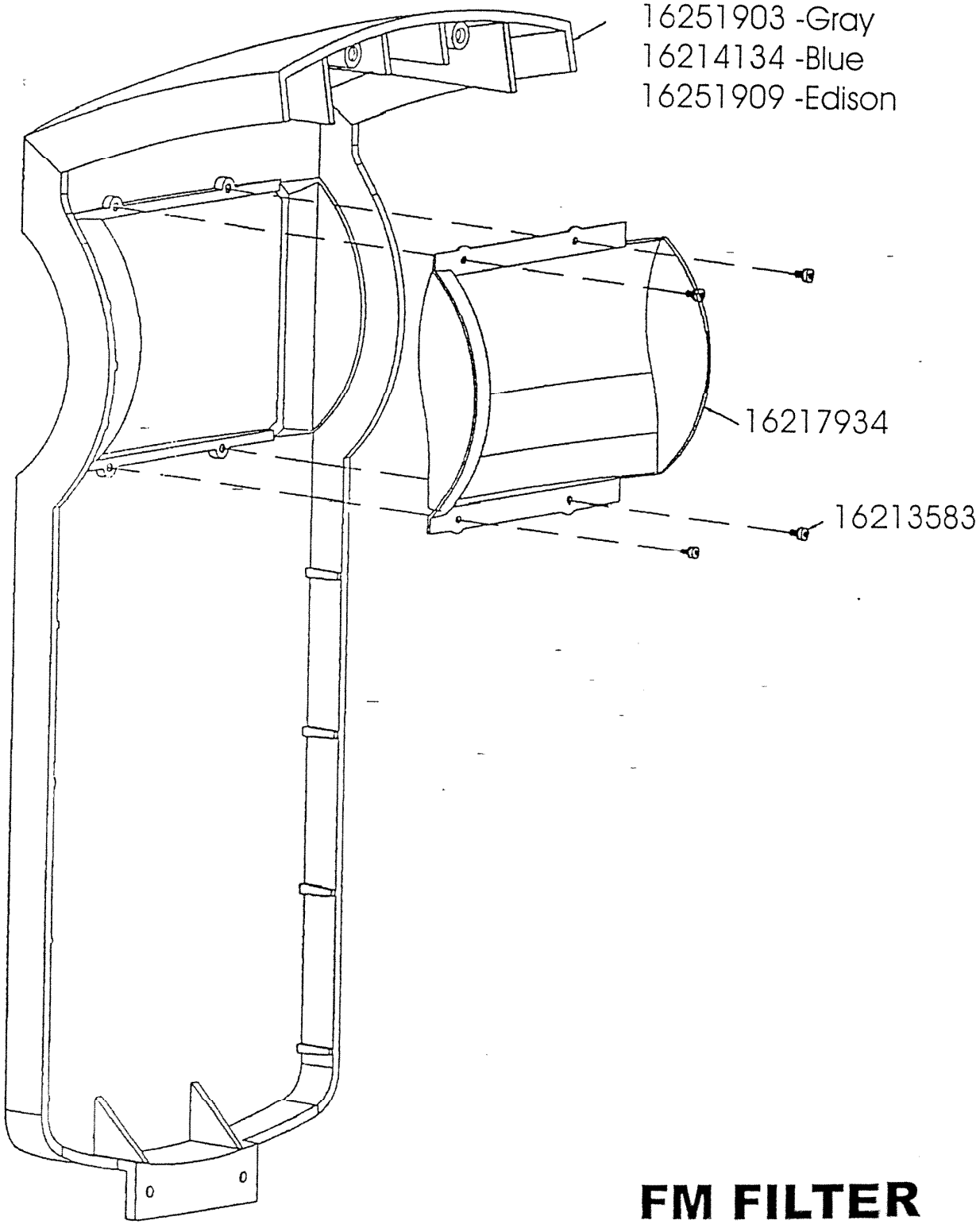
(10) Re-attach Coupler Door, re-install door pin, re-install Detent spring.

(11) Re-attach Circuit breaker door release link ASM.

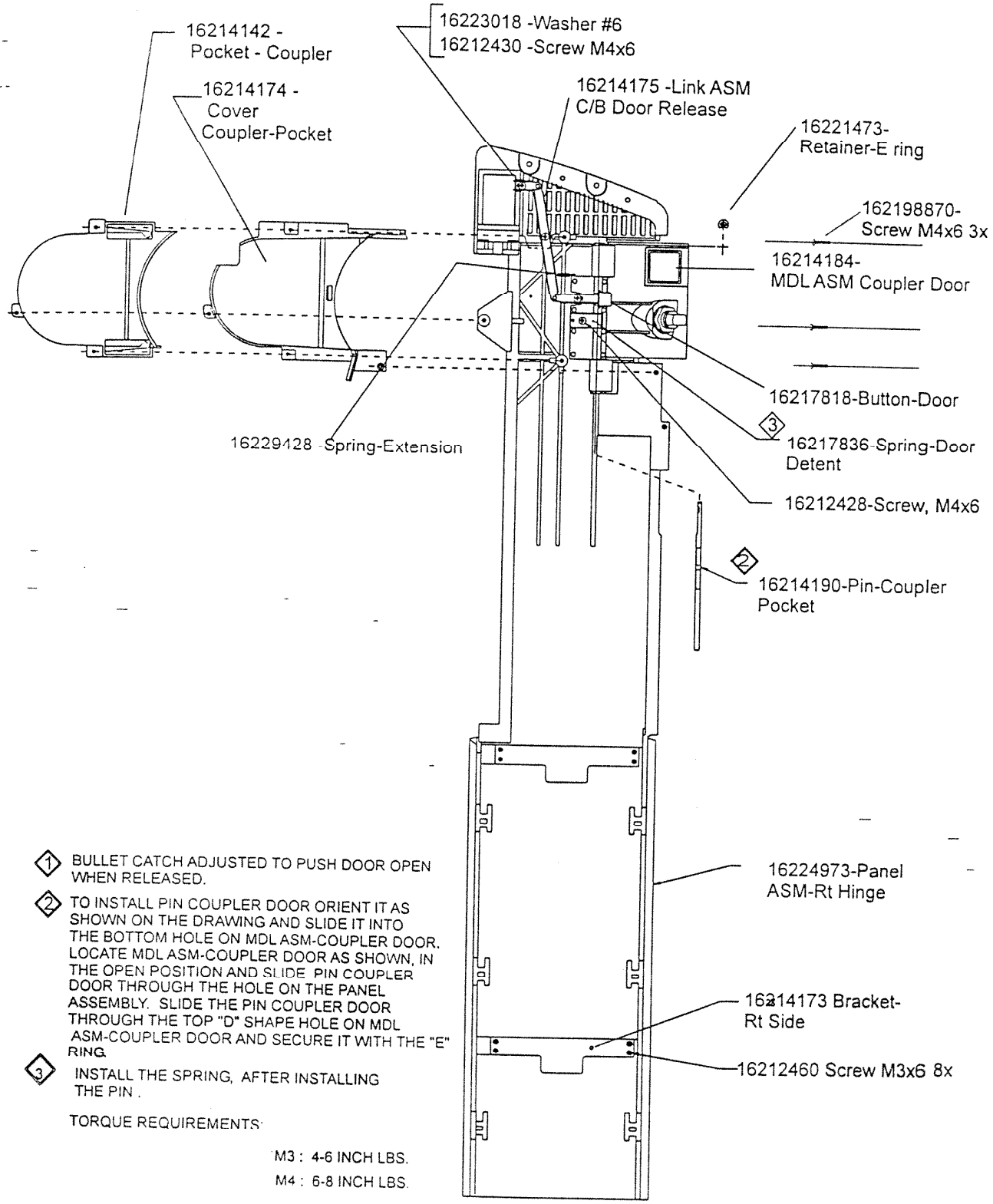
(12) Re-attach Baffle Plate.

(13) Re-attach Pocket Coupler Assy.

(14) Re-mount Right Side panel


16251903 -Gray
16214134 -Blue
16251909 -Edison
16217934
16213583

FM FILTER

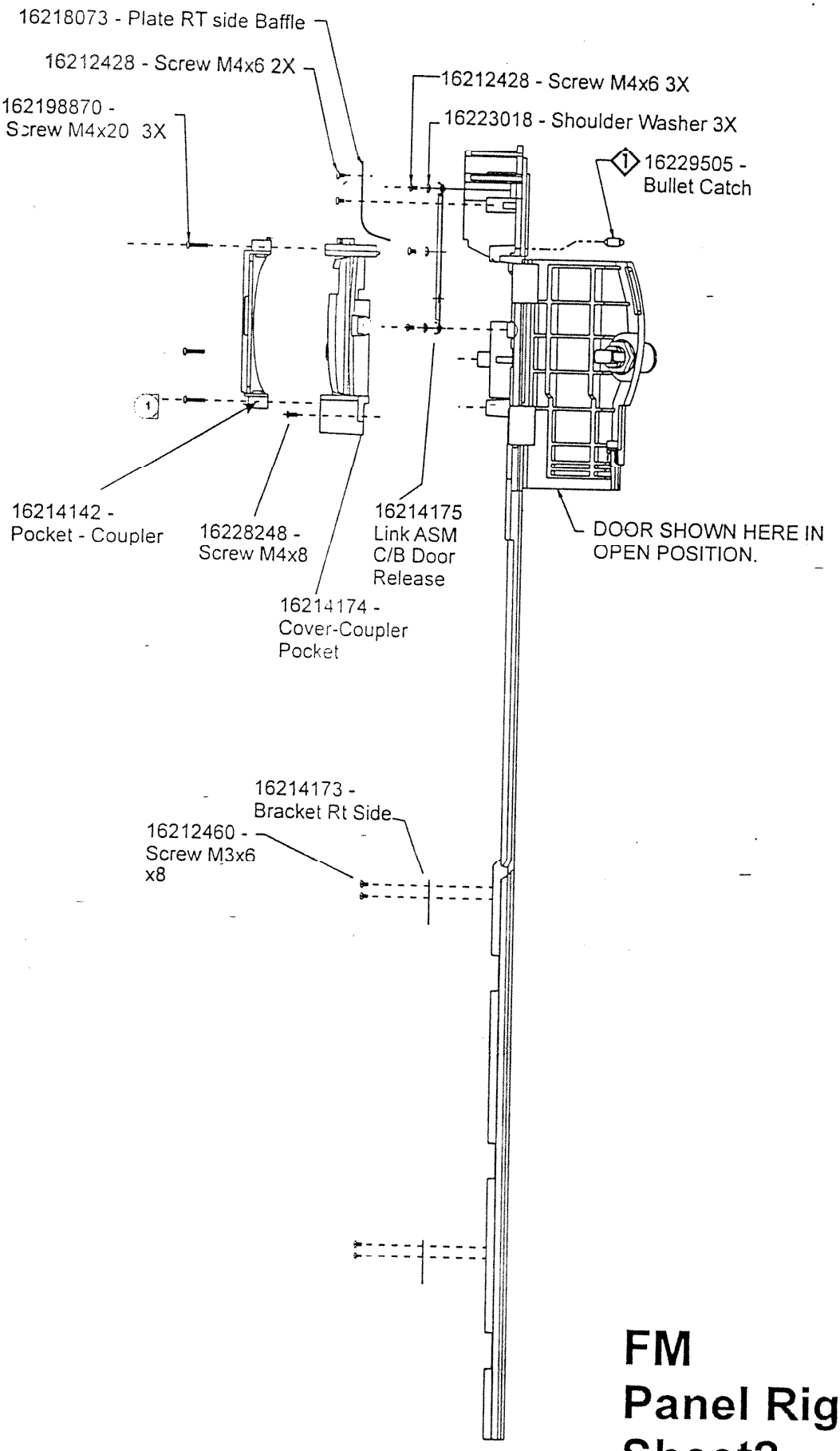


1. BULLET CATCH ADJUSTED TO PUSH DOOR OPEN WHEN RELEASED.
2. TO INSTALL PIN COUPLER DOOR ORIENT IT AS SHOWN ON THE DRAWING AND SLIDE IT INTO THE BOTTOM HOLE ON MDL ASM-COUPLER DOOR. LOCATE MDL ASM-COUPLER DOOR AS SHOWN, IN THE OPEN POSITION AND SLIDE PIN COUPLER DOOR THROUGH THE HOLE ON THE PANEL ASSEMBLY. SLIDE THE PIN COUPLER DOOR THROUGH THE TOP "D" SHAPE HOLE ON MDL ASM-COUPLER DOOR AND SECURE IT WITH THE "E" RING.
3. INSTALL THE SPRING, AFTER INSTALLING THE PIN .

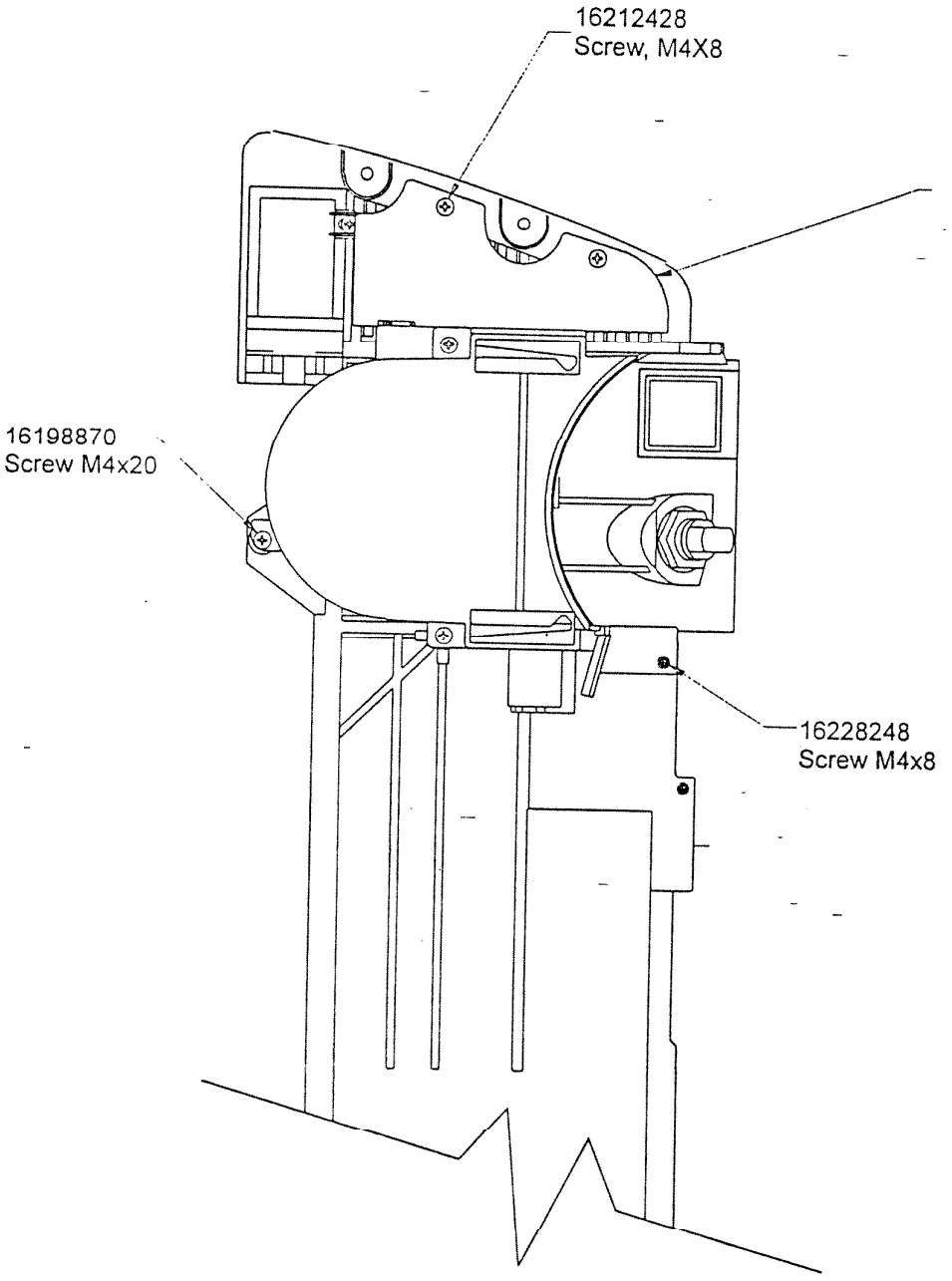
TORQUE REQUIREMENTS:

M3 : 4-6 INCH LBS.
M4 : 6-8 INCH LBS.

FM
Panel Right Side
Sheet1


16218073 - Plate RT side Baffle
16212428 - Screw M4x6 2X
16212428 - Screw M4x6 3X
162198870 - Screw M4x20 3X
16223018 - Shoulder Washer 3X
1
16229505 - Bullet Catch
16214142 - Pocket - Coupler
16228248 - Screw M4x8
16214175 Link ASM C/B Door Release
DOOR SHOWN HERE IN OPEN POSITION.
16214174 - Cover-Coupler Pocket
16214173 - Bracket Rt Side
16212460 - Screw M3x6 x8

FM
Panel Right Side
Sheet2



FM
Panel Right Side
Sheet 3

PEU Removal Procedure

A. PEU Removal:

1. Loosen two (2) Screws (P/N 16222985) (do not remove screws) located at the rear top of the PEU, and Remove two(2) located at the rear bottom of the PEU. (Refer to Fig. FM 3.1)
2. Carefully lift the PEU up, forward and out of the chassis.
3. CAUTION: This is a two person operation.

B. PEU Replacement:

1. CAUTION: This is a two person operation.
2. Carefully lift the PEU up and lower it into the chassis.
3. Tighten two (2) Screws (P/N 16222985) located at the rear top of the PEU, and Insert two(2) located at the rear bottom of the PEU.

C. Power Cable installation and Vent Control Cable/RS-232 Cable re-connect:

1. Starting at the AC Junction Box, carefully reroute the AC Power Lines (two black, one green), out from the chassis, and back through the three clamps .
2. Tighten three (3) Nuts (P/N 16148279), to the cable retaining clamps, on the left side of the SCM Frame AS M.
3. Tighten Cable Feed through hole, Clamp at the top of the AC Junction Box.
4. Tighten four (4) Screws of the AC Junction Box Cover Plate.
5. Locate the Vent Control Terminal at the top rear of the SCM. Re-connect the Vent control wires and tighten the four terminal lugs.
6. Locate the RS-232 connector at the top of the PEU. Re-connect the connector and tighten the two Hexhead screws .

Replacing the Circuit Breaker

A. Tools Required -

(1) Phillips Screwdriver

(2) Phillips Screwdriver

(3) Torx Driver.

(4) Torx Driver.

B. Parts List -

(1) Chassis Inner Top (P/N 16214006)

(2) Cable Assembly - Three Conductor, Input Power (P/N 16214087)

(3) Screws (P/N 16198867)

(4) Circuit Breaker - Airpax (P/N 16216862)

C. Replacing Circuit Breaker (P/N16216862) *Time: 0.2*

(1) Refer to first four (4) steps of "Removing Pigtail" Procedure.

(2) Remove wires coming from EMI assembly to the bottom of circuit breaker.

(3) Remove circuit breaker and replace with new circuit breaker.

(4) Re-assemble unit.

Replacing Pigtail (Cable Assembly - Three Conductor, Input Power)

A. Tools Required -

(1) Torx Driver.

(2) Torx Driver.

(3) Phillips Screwdriver.

B. Parts List -

(1) Chassis Inner Top (P/N 16214006)

(2) Cable Assembly - Three Conductor, Input Power (P/N 16214087)

(3) Screws (P/N 16198864)

C. Pigtail Removal (P/N 16214087) - Time: 0.3

(1) Remove two (3) screws (P/N 16198864) from Chassis Inner Top and lift up.

(2) Loosen circuit breaker by pressing the plastic tabs on the top of the breaker and pull it away from the main chassis.

(3) Remove two (2) screws from the top of the circuit breaker.

(4) Remove pigtail and install new pigtail.

(5) Re-connect to circuit breaker.

(6) Route wires through opening in Chassis - Inner Top and through conduit.

NOTE: *Use only factory authorized Part P/N 16214087 to replace Input Power pigtail*

Do not rewire the core assembly

Cleaning - Floor Mount SCM

A. Tools

1. Shop-type rags or Paper towels

B. Suggested Cleaning Supplies:

1. Housecleaner (4O9, Fantastik, etc.) - for cleaning plastics.
2. Protectant

   (Son Of A Gun, Armorall, etc.)

C. Cleaning the Floor Mount-SCM -

1. Use the cleaner to remove any dirt accumulation on the outside
2. Use the protectant after cleaning.

Note: ***Avoid getting protectant on Coupler Assembly handle .***

1. Plastics Removal - Wall Mount SCM:

A. **Tools Required -**

(1) Torx Driver

(2) Torx Driver Extension 12" Length

(3) Torx Driver

(4) Permanent Marker Black

(5) Storage bag (for hardware)

B. **Parts List -**

(1) Valance (P/N 16252171- Blue)
(P/N 16255028- Gray)
(P/N 16255030 - Edison)

(2) Front Cover (P/N 16214134 - Blue)
(P/N 16251892 - Gray)
(P/N 16251901 - Edison)

(3) Left Side Panel (P/N 16214882)

(4) Right Side Panel (P/N 16252170)

(5) Base - Upper Surround (P/N 16214880)

(6) Screws (10) PanHD, M6x18 (P/N 16217040)

Note: *When removing plastic pieces, follow each step in sequence, i.e., Valance - first, Front Cover - second, etc. Certain pieces cannot be removed until the preceding piece has been removed first.*

C. Valance

Time:0.1

(1) Remove two (2) screws (P/N 16217040) from underneath front plastic Valance.

(2) Pull down on Valance and remove.

D. Front Cover -

Time: 0.1

(1) Remove coupler assembly from holster.

(2) Remove two (2) screws (P/N 16217040) from bottom of front panel.

(3) Remove two (2) screws (P/N 16217040) from the back of top cover panel.

(4) Lift up on panel to remove.

E. Left Side Panel -

Time: 0.1

(1) Remove two (2) screws (P/N 16217040) from the top of the Left Side Panel.

(2) Push down on panel then pull out from the bottom to remove.

F. Right Side Panel -

Time: 0.1

(1) Remove two (2) screws (P/N 16217040) from the top of the Right Side Panel.

(2) Push down on panel then pull out from the bottom to remove.

Plastics Removal - Wallmount SCM Continued:

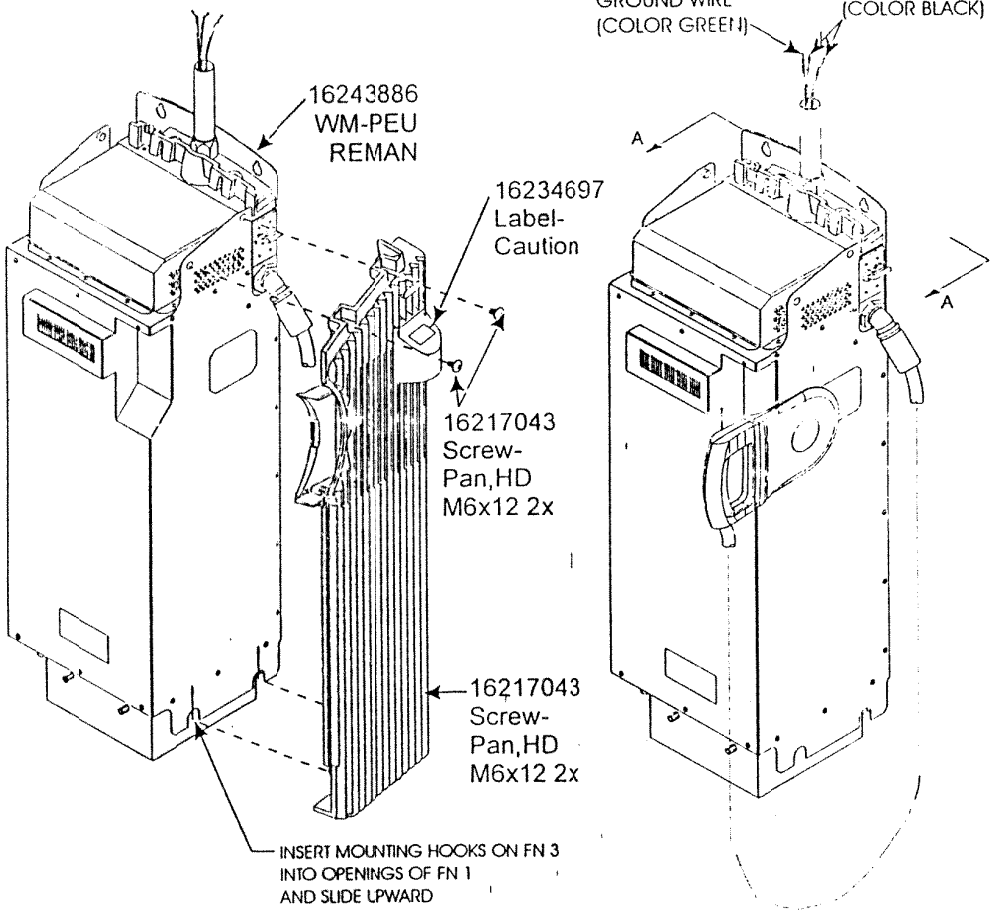
G. **Base - Upper Surround** - **Time: 0.1**

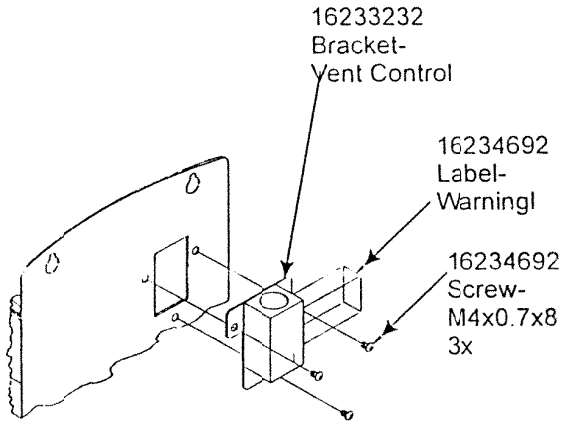
1) Remove two (2) screws (P/N 16217040) from the top of the Upper Surround.

2) Lift up on Upper Surround to remove.

3) When replacing plastics, install pieces in reverse order, i.e., Upper Surround - first, Right (or Left) Side Panel - second, etc.

Note: *Torque Specification for screws on all panels is 40-50 -in lb*



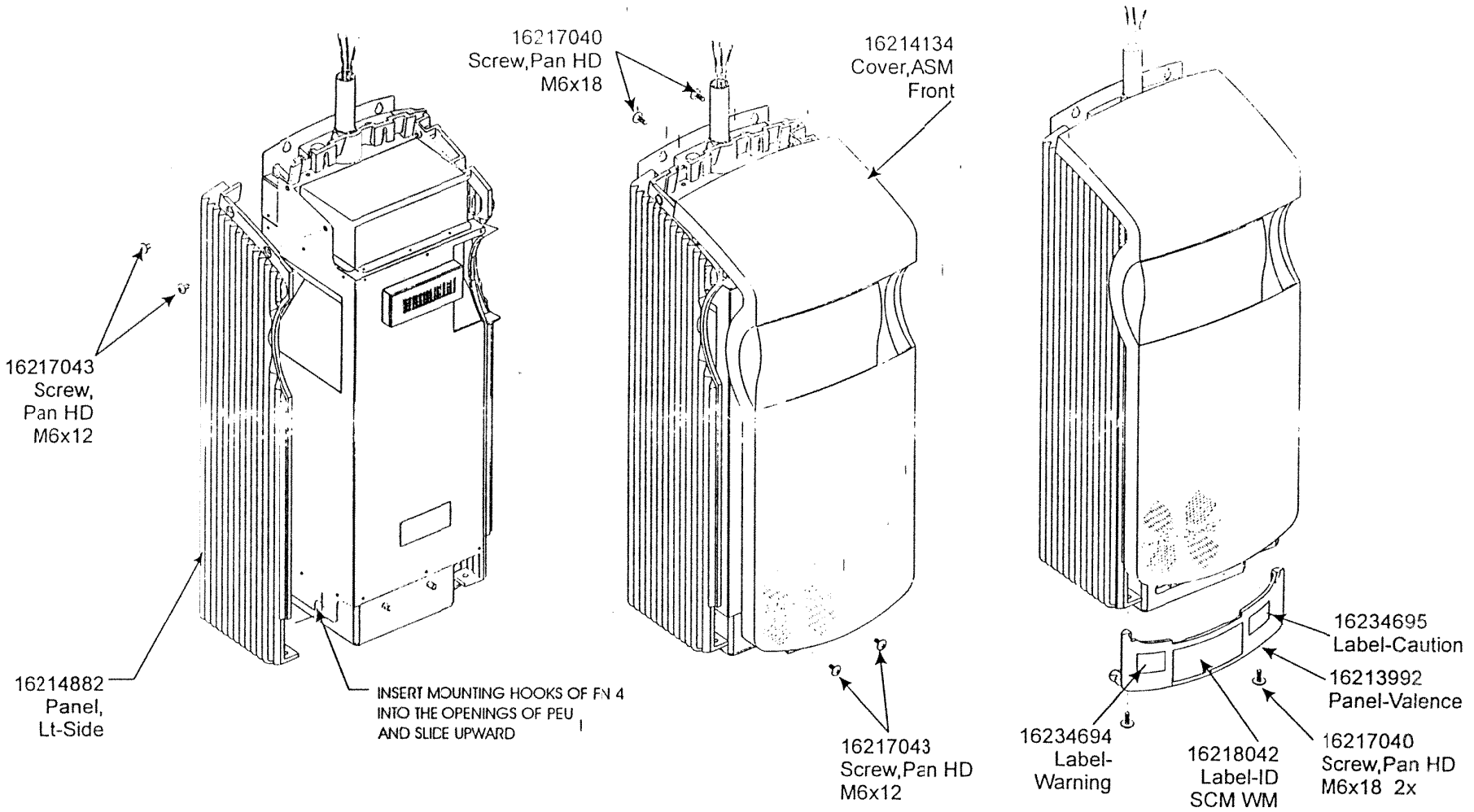


VIEW A-A

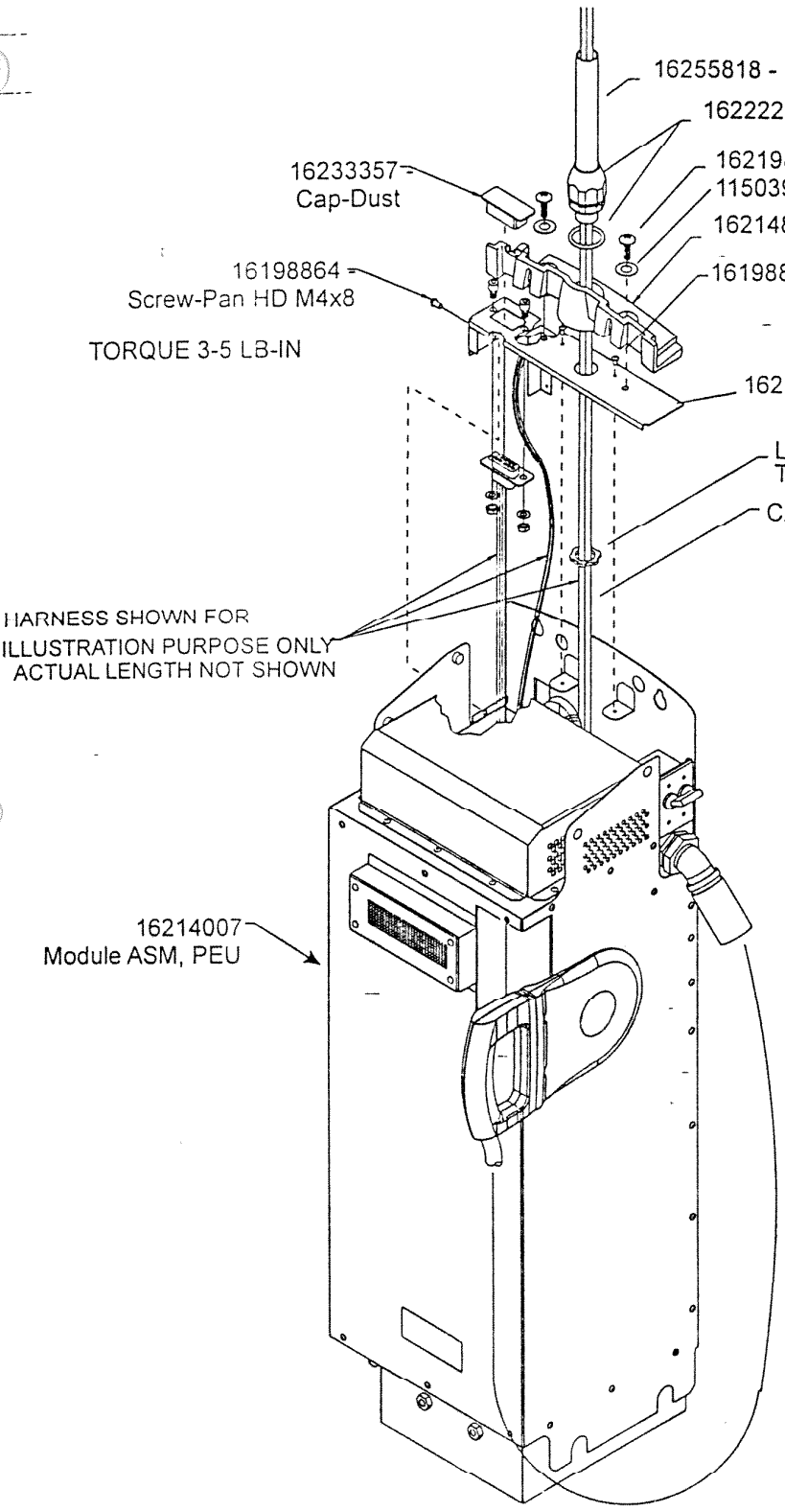
(ISOMETRIC VIEW FROM REAR SIDE)

TORQUE REQUIREMENTS: M4: 6-8 LB-IN
M6: 40-50 LB-IN

Wall Mount Plastics- Sheet 1



Wall Mount
Plastics- Sheet 2



TORQUE REQUIREMENTS:

M3: 4-6 LB-IN.

M4: 6-8 LB-IN.

M4 (NYLON): 1-2 LB-IN.

M6: 32-36 LB-IN.

10-32: 18-20 LB-IN.

NUT (.625-24 UNEF) 150-170 LB-IN.

WALL MOUNT PEU

Replacing the Circuit Breaker

A. Tools Required -

1. Phillips Screwdriver
2. Phillips Screwdriver
3. Torx Driver.
4. Torx Driver

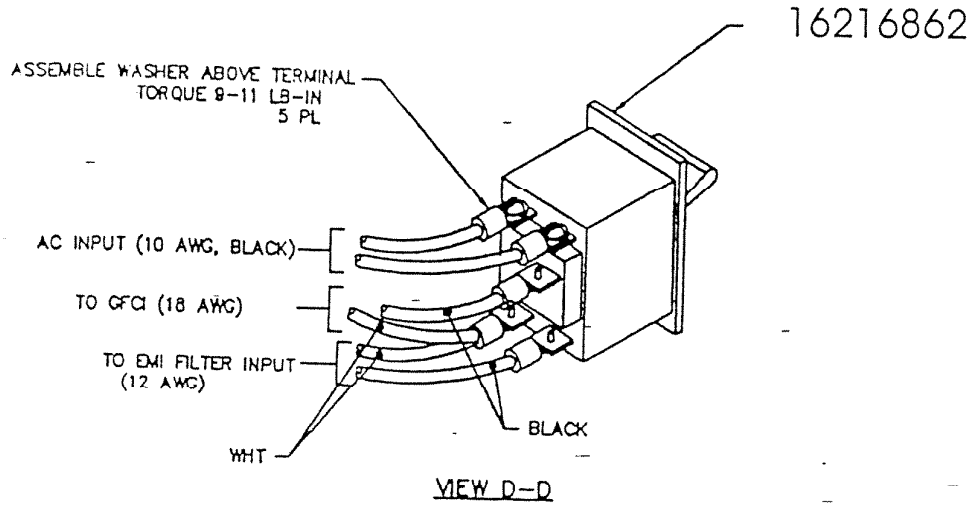
B. Parts List -

1. Chassis Inner Top (P/N 16214006)
2. Cable Assembly - Three Conductor, Input Power (P/N 16214087)
3. Screws (P/N 16198867)
4. Circuit Breaker - Airpax (P/N 16216862)

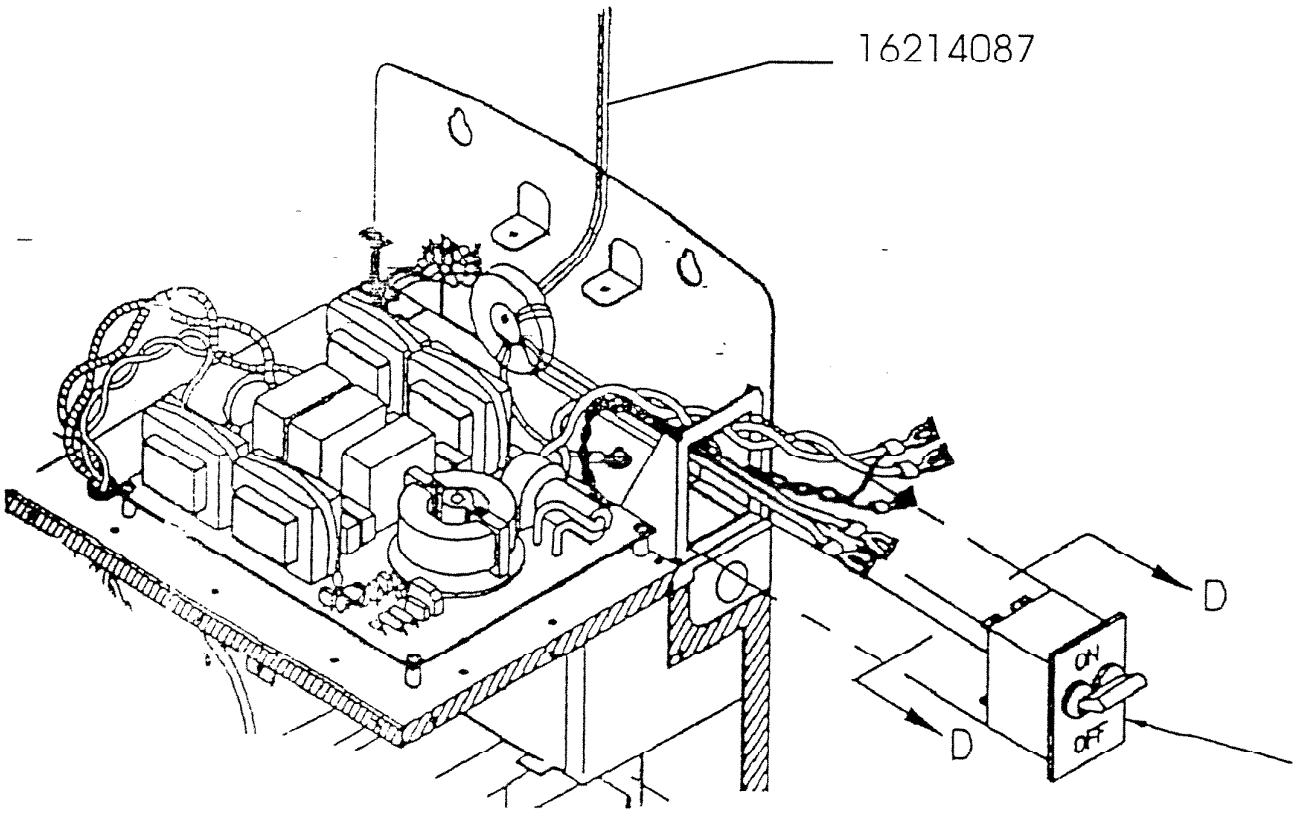
C. Replacing Circuit Breaker *(P/N16216862)*

Time: 0.2

1. Refer to first four (4) steps of "Removing Pigtail" Procedure.
2. Remove wires coming from EMI assembly to the bottom of circuit breaker.
3. Remove circuit breaker and replace with new one.
4. Re-assemble the unit.


16216862
ASSEMBLE WASHER ABOVE TERMINAL
TORQUE 8-11 LB-IN
5 PL
AC INPUT (10 AWG, BLACK)
TO GFCI (18 AWG)
TO EMI FILTER INPUT
(12 AWG)
WHT
BLACK

VIEW D-D


16214087
D
D
ON
OFF

Cleaning - Wallmount SCM

A. Tools

1. Shop-type rags or Paper towels

B. Suggested Cleaning Supplies:

1. Housecleaner (409, Fantastik, etc.) - for cleaning plastics.
2. Protectant

   (Son Of A Gun, Armorall, etc.)

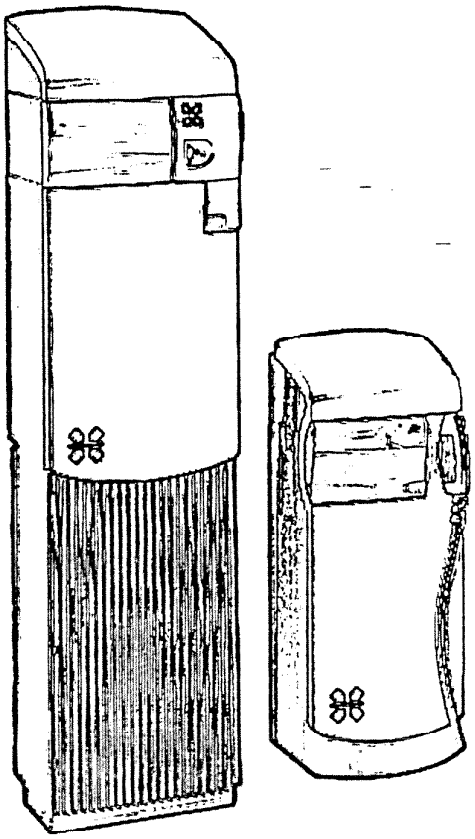
C. Cleaning the Wallmount-SCM -

1. Use the cleaner to remove any dirt accumulation on the outside
2. Use the protectant after cleaning.

Note: ***Avoid getting protectant on Coupler Assembly handle .***

8-Oct-97

Level 2 Standard Repair Times



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FLOOR MOUNT SERVICE	Check one only	STD Repair-HRS	P/N	PART REQUIRED (Check all that apply)
Remove and replace one or more items of this group (since the items of this group are interrelated, one fixed labor hour amount applies to this group regardless of the number of items replaced)..		0.1	16214884	PLATE-KICK SKIRT (2)
			16214195	COVER ASM-BOTTOM FRONT
			16214193	COVER ASM-BOTTOM REAR
			16255032	COVER ASM-REAR, SERVICE
			16251909	ASM-COVER FRONT EDISON
			16251906	ASM-COVER TOP
			16217934	FILTER-DISPLAY, FM
			16214181	CIRCUIT BREAKER DOOR ASM
Remove & replace any one or all plastics and either or both left or right side		0.2	16214168	PANEL-LEFT SIDE ASM
			16255277	PANEL-RT SIDE, SERVICE
Remove & Replace PEU		0.4	16243885	FLOOR MOUNT PEU-REMAN
Remove & Replace the Power Pigtail		0.3	16214087	INPUT POWER CABLE ASM
Remove & Replace the Circuit Breaker		0.2	16216862	CIRCUIT BREAKER
Remove & replace the Frame Assembly		0.5	16230118	FRAME ASM
Repair Jumped Track output cable		0.2	N/A	N/A
Repair Retraction Mechanism		0.4	16217830	GUIDE-RETRACTOR
			16219128	WHEEL-RETRACTION (1)
			16219128	WHEEL-RETRACTION (2)
			16219128	WHEEL-RETRACTION (3)
			16219134	SHAFT-DBL RETRACT
			16252271	WHEEL-RETRACT, SERVICE
			16240073	SPRING-COMPRESSION
			16252418	GUIDE-CABLE, SERVICE
			16230796	SCREW-M5, SHOULDER
			16223556	SPACER-ROUND
			16238383	BEARING-SLEEVE
Retraction Mechanism repair failed - R & R Frame		0.8	16230118	FRAME ASM

WALL MOUNT SERVICE	Check one only	STD LBR-HRS	P/N	PART REQUIRED (Check all that apply)
Remove and replace one or more items of this group. (since the items of this group are interrelated, one fixed labor hour amount applies to this group regardless of the number of items replaced).		0.1	16255030	PANEL-VALENCE, SERVICE
		[illegible]	16252170	PANEL ASM-RIGHT, SERVICE
		[illegible]	16251901	FRONT COVER ASM-EDISON
		[illegible]	16214882	PANEL-LEFT SIDE
		[illegible]	16214880	BASE-UPPER SURROUND
		[illegible]	16214143	DOOR-CIRCUIT BREAKER
		[illegible]	16214881	FILTER-DISPLAY
Remove & Replace PEU		0.3	16243886	WALL MOUNT PEU-REMAN
Remove & Replace Power Pigtail		0.2	16214087	INPUT POWER CABLE ASM
		[illegible]	16255818	CONDUIT-POWER, SERVICE
Remove & Replace Circuit Breaker		0.2	16216862	CIRCUIT BREAKER

HTSC EV Support Services

This document was prepared by Hughes Technical Services for GM ATV, Torrance,CA.

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